
ERAGROSTIS (POACEAE:
CHLORIDOIDEAE:
ERAGROSTIDEAE:
ERAGROSTIDINAE) OF PERU¹

Paul M. Peterson² and Isidoro Sánchez Vega³

ABSTRACT

A taxonomic treatment of *Eragrostis* Wolf for Peru is given. Twenty-three species and three subspecies of *Eragrostis* are recognized in the study area. Fifteen species of *Eragrostis* are native to Peru, and eight are adventive or introduced. *Eragrostis attenuata* Hitchc., *E. pilgeri* Fedde, and *E. magna* Hitchc. are endemic to Peru. *Eragrostis lurida* subsp. *contracta* (Pilg.) P. M. Peterson & Sánchez Vega, native to Ecuador and Peru, and *E. pilgeri* subsp. *ancashensis* (P. M. Peterson, Refulio & Tovar) P. M. Peterson & Sánchez Vega, native to Peru, are new combinations. Keys for determining the species, descriptions, distributions, specimens studied, illustrations, synonymies, and a brief discussion of Caryopsis morphology for all native and adventive species of *Eragrostis* in Peru are provided. The names *E. andicola* R. E. Fr., *E. contracta* Pilg., *E. tristis* Jedwabn., and *Poa mexicana* Hornem. are lectotypified.

RESUMEN

Se presenta un estudio taxonómico de *Eragrostis* Wolf para Perú. Veintitrés especies y tres subespecies de *Eragrostis* se reconocen en el área de estudio. Quince especies de *Eragrostis* son nativas de Perú y ocho son advenedizas o introducidos. *Eragrostis attenuata* Hitchc., *E. pilgeri* Fedde y *E. magna* Hitchc. son endémicos de Perú. *Eragrostis lurida* subsp. *contracta* (Pilg.) P. M. Peterson y Sánchez Vega native de Ecuador y Perú, y *E. pilgeri* subsp. *ancashensis* (P. M. Peterson, Refulio y Tovar) P. M. Peterson y Sánchez Vega native de Perú son combinaciones nuevas. Se incluyen claves para determinar las especies, descripciones, distribuciones, los especímenes estudiados, las ilustraciones, las sinonimias, y una breve discusión de la morfología de la Cariopsis para todas las especies nativas y advenedizas de *Eragrostis* en Perú. Los nombres *E. andicola* R. E. Fr., *E. contracta* Pilg., *E. tristis* Jedwabn. y *Poa mexicana* Hornem. fueron lectotipificados.

Key words: Chloridoideae, Eragrostideae, Eragrostidinae, *Eragrostis*, Gramineae, Peru, Poaceae.

Peru is a tropical country located in the central and western part of South America between 0° and 18° south latitude. The central Andes or backbone of Peru are important in the formation and delineation of three great regions: coast, mountain, and forest. The coastal region next to the Pacific Ocean is an extremely xeric, narrow, sandy plain that rises abruptly to the east. This region is occasionally transected by river valleys, and the climate is very mild and warm. The mountain region or “cordillera de Andes” consists of high peaks and extensive high plains (altiplano) that are sometimes dissected by deep, narrow valleys. The climate in this region can be very cold, and it is not uncommon to have snow above 3800 m. The tropical forest region east of the cordillera extends into the Amazonian river basin where there are high levels of

biodiversity associated with many different habitats. The climate here is very warm and humid with high levels of precipitation, and there are great rivers like the Río Marañón and the Río Ucayali that feed into the Río Amazonas.

The Poaceae are a diverse family that occupies a myriad of terrestrial habitats in Peru, with the exception of the permanent snow fields. The taxonomic knowledge of this family in Peru is incomplete, and it is still possible to encounter novel species. Hitchcock (1927), in his treatment of the grasses of Ecuador, Peru, and Bolivia, recognized 27 species of *Eragrostis* Wolf, 16 of these being reported in Peru. Standley (1936), in his *Flora of Perú*, recorded 19 species. More recently, Tovar (1993) produced an integral study of the Peruvian grasses, including 21

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² Department of Botany, National Museum of Natural History, Smithsonian Institution, Washington, DC 20013-7012, U.S.A. peterson@si.edu.

³ Departamento de Biología, Herbario CPUN, Universidad Nacional de Cajamarca, Apartado 55, Cajamarca, Peru.

species of *Eragrostis*. Brako and Zarucchi (1993) list 29 species as being present in Peru; however, many of these are not verified or are synonyms of names in current use. All of these treatments are out of date, and there have been many new reports of grasses from Peru. Because *Eragrostis* is a large genus and is easily dispersed, a modern investigation was undertaken to more clearly understand its biogeography and systematics. We report 23 species and three subspecies of *Eragrostis* in Peru. Two of the subspecies are new combinations.

Eragrostis is a large genus of approximately 350 species occurring in tropical, subtropical, and warm temperate regions throughout the world (Clayton & Renvoize, 1986; Watson & Dallwitz, 1992; Peterson et al., 1995, 1997, 2001). There are 111 species of *Eragrostis* recorded in North, Central, and South America, 67 native in South America (Peterson et al., 2001, 2007; Peterson, 2003). The genus is characterized by having many-flowered spikelets where the disarticulation of the lemma and palea occurs separately, lemmas that are usually 3-nerved and unawned, longitudinally bowed-out paleae with ciliate keels, paniculate inflorescences, and leaves with ciliate ligules (Peterson et al., 1997). Most species of *Eragrostis* occupy open habitats with poor soils, and many occur in disturbed localities (Clayton & Renvoize, 1986; Van den Borre & Watson, 1994).

All species of *Eragrostis* that have been examined anatomically exhibit "Kranz" or C_4 leaf anatomy (except *E. walteri* Pilg. from South Africa, which exhibits C_3 leaf anatomy; see Ellis, 1984), and species have either chloridoid bicellular microhairs (with the broad, short terminal cell the same thickness as the basal cell) or panicoid bicellular microhairs (with a long, thin-walled terminal cell) (Amarasinghe & Watson, 1990). Apparently, three C_4 biochemical types exist in *Eragrostis*: NAD-ME (nicotinamide adenine dinucleotide co-factor malic enzyme), PCK (phosphoenolpyruvate carboxykinase), and intermediates (Prendergast et al., 1986).

The classification of the tribe Eragrostideae has been problematic, primarily because no one has been able to define this group and select diagnostic characters that exclusively delimit this tribe from other tribes in the Chloridoideae (Hilu & Alice, 2000, 2001; Van den Borre & Watson, 1997, 2000). Historic accounts of the ever-changing opinions of systematists on the classification of the Eragrostideae can be found in Peterson et al. (1995) and Van den Borre and Watson (1994). Peterson et al. (1997) recognized 38 Eragrostideae genera occurring in the New World, then later placed many of these same genera in the tribe Cynodonteae without delineating an Eragrostideae (Peterson et al., 2001). Based on results of a DNA

sequence study of the Chloridoideae (Columbus et al., 2007), Peterson et al. (2007) has proposed a completely new classification of the New World Chloridoideae. Here, the Eragrostideae are narrowly interpreted to include only three small subtribes (Cotteneinae, Uniolinae, and Eragrostidinae) that diverge as a clade at the base of the chloridoids (Peterson et al., 2007). Character trends in the Eragrostideae include spikelets with many florets, lemmas with 3 to 13 nerves, and many species adapted to xeric habitats.

The subtribe Eragrostidinae as treated here includes three genera: *Cladoraphis cyperoides* (Thunb.) S. M. Phillips, introduced from Africa; *Eragrostis* with 112 species (86 native New World spp.); and *Steirachne* Ekman with two species (Peterson, 2003; Peterson et al., 2007). The Eragrostidinae are characterized by having hairy or glabrous culm nodes; hairy or glabrous rachillas; entire lemma apices that are awnless, mucronate, or short-awned (only in the latter two genera); glabrous or scabrous lemmas that are (1)3(5)-nerved; and short basal microhair cells (15–75 μm) on the abaxial epidermis of the leaf blade.

Recent systematic treatments of *Eragrostis* from Argentina (Nicora, 1998), Australia (Lazarides, 1997), Bolivia (Renvoize, 1998), Brazil (Boechat & Longhi-Wagner, 2000, 2001), Ecuador (Lægaard & Lægaard & Peterson, 2001), Guianas (Judziewicz, 1991), Malesia (Veldkamp, 2002), Mesoamerica (Davidse, 1994), Mexico (Beetle et al., 1991; Peterson & Valdés Reyna, 2005), the United States and Canada (Peterson, 2003), and Zambesiaca (Cope, 1998) have given us a good understanding of the species limits and their distribution. Based on nuclear and plastid DNA sequences, Ingram and Doyle (2003, 2004, 2007) tested the monophyly of *Eragrostis* and found that, with the inclusion of *Acamptoclados* Nash (*E. sessilispica* Buckley), *Diandrochloa* De Winter, *Neeragrostis* Bush, and *Pogonarthria* Stapf, the genus is indeed monophyletic. However, only 37 species of *Eragrostis* were included in their analysis, so any infrageneric interpretations were beyond the scope of their work. What is lacking is a definitive treatment of the infrageneric classification of the entire genus. Based on spikelet disarticulation, Clayton (1974) and Clayton and Renvoize (1986) have arrived at a first approximation to natural groups and have presented a key to sections *Psilantha* (K. Koch) Tzvelev, *Eragrostis*, *Lappula* Stapf, and *Platystachya* Benth. In most native New World species, the lemmas fall acropetally (from the base toward the apex) from the persistent rachilla, with the paleae persistent on the rachilla. The other major pattern of spikelet disarticulation in *Eragrostis* is when the lemmas fall basipetally (from the apex toward the base). Van den

Borre and Watson (1994) investigated 53 species of *Eragrostis* and found that anatomical characters, among others, support the recognition of two distinct groups: subgenus *Eragrostis* and subgenus *Caesia* Van den Borre & L. Watson. The most comprehensive attempt so far is Lazarides' (1997) treatment of the Australian *Eragrostis*, in which he recognized six groups primarily based on spikelet disarticulation. Lazarides (1997) correlates his classification with Van den Borre and Watson (1994), who recognized subgenus *Eragrostis* and subgenus *Psilantha*, and with Amarasinghe and Watson (1990), who investigated microhair morphology within the genus. Cope's (1998) informal treatment of *Eragrostis* for the flora of Zambesiaca is also comprehensive since he delineates nine species groups based on panicle, lemma, and palea morphology in addition to spikelet disarticulation. Based on caryopsis morphology, Boechat and Longhi-Wagner (2003) placed 49 of the 53 species of *Eragrostis* that occur in Brazil into the following six groups: smooth-walled (six species), medianly reticulate (14 species), roughly reticulate (10 species), finely reticulate (nine species), alveolate (six species), and striate (four species). Overall morphological features led Peterson and Valdés Reyna (2005) to recognize the following four hypothesized lineages within 26 species of *Eragrostis* from northeastern Mexico: an Old World group, the *E. intermedia* Hitchc. complex, the *E. pectinacea* complex, and the *E. spectabilis* (Pursh) Steud.–*E. secundiflora* J. Presl group.

Our taxonomic treatment contains a key for determining species, descriptions, distribution, specimens studied, illustrations, synonymies, and a brief discussion of caryopsis morphology and its usefulness in hypothesizing relationships among the native and adventive species of *Eragrostis* in Peru. This study is based on the examination of herbarium specimens from AMAZ, CPUN, CUZ, HAO, HUT, US, and USM, including the type specimens of most of the species studied.

TAXONOMIC TREATMENT

Eragrostis Wolf, Gen. Pl. 23. 1776. TYPE: *Eragrostis minor* Host, Icon. Descr. Gram. Austriac. 4: 15. 1809 (lectotype, designated by Ross, Acta Bot. Neerl. 15: 157. 1966).

Plants annual or perennial; usually synoecious, sometimes dioecious; caespitose, stoloniferous, or rhizomatous; flowering culms (2–)5–150 cm tall, not woody, erect, decumbent, or geniculate, sometimes rooting at the lower nodes, simple or branched; internodes solid or hollow; bud initiation intravaginal, rarely extravaginal. Leaf sheaths open, often with tufts

of hairs at the apices, hairs 0.3–9 mm; ligules usually membranous and ciliolate or ciliate, cilia sometimes longer than the membranous base, occasionally of hairs or membranous and non-ciliate; blades flat, folded, or involute. Inflorescences terminal, sometimes also axillary, simple panicles, open to contracted or spike-like, terminal panicles usually exceeding the upper leaves; pulvini in the axils of the primary branches glabrous or hairy; branches not spike-like, not disarticulating. Spikelets 1–20 × 0.5–4.5 mm, laterally compressed, with 2 to 40 florets; disarticulation below the fertile florets, sometimes also below the glumes, acropetal with deciduous glumes and lemmas but persistent paleae, or basipetally with the glumes often persistent and the florets usually falling intact; glumes usually shorter than the adjacent lemmas, (1)3(5)-veined, not lobed, apices obtuse to acute, unawned; calluses glabrous or sparsely pubescent; lemmas usually glabrous, obtuse to acute, 3(5)-veined, usually keeled, unawned or mucronate; paleae shorter than the lemmas, longitudinally bowed-out by the caryopses, 2-keeled, keels usually short or long ciliate, intercostal region membranous or hyaline; anthers 2 or 3; ovaries glabrous; styles free to the bases. Cleistogamous spikelets occasionally present, sometimes on the axillary panicles, sometimes on the terminal panicles. Caryopses variously shaped; hilum short; embryo with an epiblast, scutellar tail, and elongated mesocotyl internode (formula P + PF), endosperm hard. Base chromosome number, $x = 10$ (Watson & Dallwitz, 2003).

Comments. In most taxa native to the Western Hemisphere, disarticulation of the spikelet is acropetal (florets first maturing at the base) and the lemmas fall with the caryopses, leaving paleae attached to the rachilla. The common mode of disarticulation for introduced species from Africa and Asia is basipetal, where the florets near the apex mature first.

Etymology. The origin of the name is somewhat obscure. Nathaniel von Wolf (1776), who first named *Eragrostis*, made no statement concerning the origin of its name. Clifford (1996) provides three possible derivations: from “eros” (love) and “Agrostis” (the Greek name for an indeterminate herb); from the Greek “er” (early) and “agrostis” (wild), referring to the fact that some species of *Eragrostis* are early invaders of arable land; or the Greek “eri-” (a prefix meaning “very” or “much”), suggesting that the name means many-flowered “Agrostis.” Watson and Dallwitz (2005) indicate that the derivation of *Eragrostis* is “from the Greek ‘eros’ (love) or ‘era’ (earth) and ‘agrostis’ (a grass), probably alluding to the characteristic, earthy (human) female aroma of the inflorescences of many species.”

Ecology and geographic distribution. The 23 species of *Eragrostis* in Peru are widely distributed among the coast, mountain, and forest regions. The annual species are more conspicuous along the sandy plain of the coast, the interior valleys of the western slopes, and in the dry Andean valleys at lower elevations. Along the north coast, *E. tenella* (L.) P. Beauv. ex Roem. & Schult., *E. ciliaris* (L.) R. Br., and *E. cilianensis* (All.) Vignolo ex Janch. form part of the xerophytic vegetation that flowers between January and March. The lomas vegetation to the south of 8° south latitude contains *E. attenuata* Hitchc., *E. peruviana* (Jacq.) Trin., and *E. weberbaueri* Pilg. and generally flowers between June and October. In the mountains, species of *Eragrostis* are an integral component of natural, high-elevation ecosystems. *Eragrostis nigricans* (Kunth) Steud. and *E. pilosa* (L.) P. Beauv. are usually found growing along margins of cultivated fields, while many other species inhabit edges of roads and trails. *Eragrostis lurida* J. Presl, *E. magna* Hitchc., *E. pastoensis* (Kunth) Trin., *E. pilgeri* Fedde, and *E. weberbaueri* are principally found in the altiplano and puna of southern Peru, and disappear in the jalca or páramo in the north. In this mountainous region of central and southern Peru, there is a greater number of perennial, native species of *Eragrostis*. *Eragrostis hypnoides* (Lam.) Britton, Sterns & Poggenb. is the only species commonly found along the coast and in the Amazonian forest in areas that are periodically flooded (i.e., margins of rivers).

Caryopsis morphology. The caryopsis contains many morphological features that are important aids in the identification of species, and this information can be used to infer hypothetical relationships among the grasses (Colbry, 1957; Terrell & Peterson, 1993; Boechat & Longhi-Wagner, 2003). In *Eragrostis*, grains can be terete, subterete, or rectangular or trigonous in cross section and are sometimes compressed either dorsally (on a plane with the embryo) or laterally (Figs. 1–6). The shape of the grain can vary from spherical to much longer than broad (ellipsoid, obovoid, ovoid, rectangular-prismatic, etc.). The embryo is located on the dorsal (abaxial) surface of

the grain, and the hilum is the tiny scar left from the attachment of the funiculus found near the base on the ventral surface. The ventral (adaxial) surface can be rounded, flattened, or sometimes have a sulcus or groove running longitudinally along the body. The surface of the grain can be smooth to variously sculptured and is often striate to reticulate. In the grasses, the surface or pericarp of the grain is almost always adnate, i.e., a true caryopsis; however, a few species of *Eragrostis* (see *E. japonica* (Thunb.) Trin.) can have loose pericarps that shed when the grain is moistened. The color of the grain can vary in the Peruvian *Eragrostis* from light brownish or whitish to reddish brown, and the grains can be translucent to opaque.

The most common caryopsis type found in Peruvian *Eragrostis* is the rectangular-prismatic to irregularly triangular, laterally flattened, striate, reticulate-walled, and ventrally grooved grain. This is found predominately in species that occupy the altiplano such as *E. lurida*, *E. magna*, *E. pastoensis*, and *E. pilgeri*, as well as in *E. andicola* R. E. Fr., *E. lugens* Nees, *E. soratensis*, *E. mexicana* (Hornem.) Link, *E. nigricans*, and *E. tenuifolia* (A. Rich.) Hochst. ex Steud. (of African origins). *Eragrostis pectinacea* (Michx.) Nees and *E. pilosa* are similar to the last group, although these two species have grains that are striate only and rectangular in cross section, so they are at least flattened ventrally but do not have a groove. *Eragrostis maypurensis* (Kunth) Steud. is unique in possessing rhomboid reticulations without striations. *Eragrostis tenella*, *E. atrovirens* (Desf.) Trin. ex Steud., *E. attenuata*, *E. cilianensis*, *E. ciliaris*, *E. curvula* (Schräd.) Nees, *E. hypnoides*, *E. japonica*, *E. maypurensis*, *E. peruviana*, and *E. weberbaueri* are all circular or elliptical to ovate/obovate in cross section. *Eragrostis tenella*, *E. attenuata*, *E. ciliaris*, *E. curvula*, and *E. japonica* are striate or smooth with no evidence of reticulations. *Eragrostis ciliaris*, *E. japonica*, *E. pilosa*, and *E. curvula* all have somewhat dorsally flattened caryopses. *Eragrostis curvula*, in addition to being strongly dorsally flattened, can sometimes possess a shallow and broad ventral groove.

KEY TO THE SPECIES OF *ERAGROSTIS* IN PERU

- 1a. Annuals, caespitose, stoloniferous or mat-forming to geniculate, without innovations at the basal nodes.
 - 2a. Palea keels prominently ciliate, the cilia 0.2–0.8 mm long.
 - 3a. Panicles 1–7 cm wide, open, narrowly ovate; primary branches ascending and spreading 20–100° from the rachises; spikelets (1–)1.5–2.2 mm long 1. *E. tenella*
 - 3b. Panicles 0.2–1.5(–3) cm wide, cylindrical, spiciform and/or spike-like; primary branches ascending and tightly appressed; spikelets 1.8–4.5 mm long.
 - 4a. Spikelets 1.8–3.2 mm long; cilia on the palea stiff and pectinate-thickened near base; stamens 2 6. *E. ciliaris*
 - 4b. Spikelets 3–4.5 mm long; cilia on the palea soft and silky, not pectinate-thickened near base; stamens 3 13. *E. peruviana*

- 2b. Palea keels smooth or scabrous, the scabridities less than 0.2 mm long.
 - 5a. Plants extensively stoloniferous and mat-forming; panicles 1–3.5 cm long, terminal and axillary; culms (2–)5–12(–20) cm tall 8. *E. hypnoides*
 - 5b. Plants not stoloniferous but occasionally mat-forming; panicles (3–)4–40 cm long; culms 8–130 cm tall.
 - 6a. Ligules membranous, glabrous 9. *E. japonica*
 - 6b. Ligules membranous and ciliate, with a row of tiny white hairs.
 - 7a. Crateriform glands present on the keels of the lemma, these glands usually present on the keels of the glumes, margins of the blades, sheaths, and below the nodes of the culm 5. *E. cilianensis*
 - 7b. Crateriform glands not present on the keels of the lemma, keels of the glumes, and margins of the blades, occasionally present below the nodes of the culm and sheaths.
 - 8a. Caryopses with a shallow or deep ventral groove.
 - 9a. Spikelets not arranged in glomerules, 5- to 11(to 15)-flowered, (4–)5–10(–11) mm long; pedicels appressed to narrowly divergent, stiff 14. *E. mexicana*
 - 9b. Spikelets arranged in glomerules, 2- to 4(to 5)-flowered, 2.6–3.8 mm long; pedicels spreading, divaricate and stout 15. *E. nigricans*
 - 8b. Caryopses without a ventral groove.
 - 10a. Lower glumes 2–2.6 mm long, usually longer than upper; pedicels 0–1.5 mm long, shorter than the spikelets; lemmas chartaceous, lateral nerves and midnerve evident, usually green; stamens 2; caryopses obovate to circular in cross section 13. *E. maypurensis*
 - 10b. Lower glumes 0.3–1.5 mm long, shorter than the upper; pedicels 0.8–10 mm long, longer or shorter than the spikelets; lemmas hyaline to membranous, lateral nerves and midnerve inconspicuous to moderately conspicuous, never green; stamens 3; caryopses rectangular in cross section.
 - 11a. Lower glumes 0.5–1.5 mm long, at least 1/2 as long as the lowest lemmas; paleae persistent; spikelets 1.2–2.5 mm wide; panicle branches solitary or paired at the lowest two nodes; lemmas with moderately conspicuous lateral nerves 17. *E. pectinacea*
 - 11b. Lower glumes 0.3–0.6(–0.8) mm long, usually less than 1/2 as long as the lowest lemmas; paleae easily deciduous; panicle branches usually whorled at the lowest two nodes; lemma with inconspicuous lateral nerves 20. *E. pilosa*
 - 1b. Plants perennial or biennial, caespitose, forming innovations at the basal nodes.
 - 12a. Panicles 0.2–2 cm wide, contracted, densely flowered, cylindrical and narrowly spicate to spiciform, the primary branches ascending and tightly appressed.
 - 13a. Panicle rachis densely pilose, the hairs not rigid; culm nodes silky pilose, the hairs up to 3 mm long; blades densely silky pilose above and below 23. *E. weberbaueri*
 - 13b. Panicle rachis glabrous; culm nodes glabrous or occasionally with a tuft of hairs, the hairs less than 1 mm long; blades glabrous, scabrous, with a few scattered hairs or short pilose but not densely silky.
 - 14a. Panicles 2–5 mm wide; lower glumes 0.8–1 mm long; lemma apex obtuse; caryopses only striate, elliptical in cross section and without a ventral groove; anthers about 0.3 mm long . . . 4. *E. attenuata*
 - 14b. Panicles 5–20 mm wide; lower glumes 1–1.5 mm long; lemma apex acute; caryopses striate and reticulate, rectangular in cross section and usually with a ventral groove or at least flattened ventrally; anthers 0.3–0.6 mm long.
 - 15a. Secondary panicle branches condensed into tightly glomerate lobes of spikelets; pedicels 0.1–1 mm long, scabrous; lemma with conspicuous lateral nerves, lemma 1.6–2.4 mm long; blades scaberulous above without additional hairs 11b. *E. lurida* subsp. *contracta*
 - 15b. Secondary panicle branches composed of loosely overlapping spikelets; pedicels 0.5–5 mm long; lemma with inconspicuous lateral nerves, lemma 1.2–2.1 mm long; blades scaberulous above, sometimes with scattered hairs up to 4 mm long 16. *E. pastoensis*
 - 12b. Panicles 2–27 cm wide, open, not contracted, the primary branches ascending and spreading to divaricate.
 - 16a. Lemmas 2–3.2 mm long; upper glumes (1.8–)2–3 mm long.
 - 17a. Anthers 0.4–0.7(–0.8) mm long; paleae 1.2–2.4 mm long.
 - 18a. Secondary panicle branches composed of loosely overlapping spikelets; blades with scattered small oblong glands located above the veins; sheaths with papillose-based hairs; pedicels 1.8–5 mm long, divaricate at maturity with a single glandular band near the middle 2. *E. andicola*
 - 18b. Secondary panicle branches; blades without small oblong glands located above the veins; sheaths without papillose-based hairs; pedicels 0.1–1 mm, ascending and appressed, without any glandular bands 11. *E. lurida*
 - 17b. Anthers 0.8–2 mm; paleae 2–3.1 mm.
 - 19a. Spikelets 1.2–2 mm; caryopses dorsally flattened, smooth to striate, elliptical in cross section, ventral surface with a shallow, broad groove or ungrooved 7. *E. curvula*
 - 19b. Spikelets 2–4.5 mm wide; caryopses laterally flattened to rectangular-prismatic, rectangular to triangular in cross section, with a deep ventral groove.

- 20a. Culms 80–150 cm tall, with short rhizomes near base; spikelets 2–2.4 mm wide; rachillas hairy only near apex, the hairs less than 0.2 mm long; blades 26–60 cm long, 3–7 mm wide 12. *E. magna*
- 20b. Culms 26–84 cm tall, without rhizomes; spikelets (2–)2.2–4.5 mm wide; rachillas hairy along entire length, the hairs 0.4–1.8 mm long; blades (6–)10–22(–26) cm long, 1–2.5(–3) mm wide 19. *E. pilgeri*
- 16b. Lemmas 1.2–2(–2.1) mm long; upper glumes 0.5–2 mm long.
- 21a. Spikelets 6–12(–19) mm long, 6- to 22-flowered.
- 22a. Culms (70–)75–130 cm tall; lower glumes 1.2–1.4 mm long; upper glumes 1.4–1.7 mm long; caryopses circular in cross section and not laterally flattened and without a ventral groove; anthers 0.7–0.9 mm long 3. *E. atrovirens*
- 22b. Culms 25–75 cm tall; lower glumes 0.3–0.6 mm long; upper glumes 0.5–1 mm long; caryopses narrowly triangular in cross section, strongly laterally flattened with a deep ventral groove; anthers 0.2–0.4 mm long 22. *E. tenuifolia*
- 21b. Spikelets 2–6 mm long, 2- to 10-flowered.
- 23a. Panicles 0.5–5(–7) cm wide, narrowly ovate, the primary branches floriferous near base; secondary branches condensed into tightly glomerate lobes of spikelets; pedicels 0.1–1 mm long, ascending and appressed; lemmas with conspicuous lateral nerves 11. *E. lurida*
- 23b. Panicles 2–27 cm wide, open, ovate, the primary branches not floriferous near base; secondary branches composed of loosely overlapping spikelets; pedicels 0.5–6(–7) mm long, appressed to spreading; lemmas with inconspicuous lateral nerves.
- 24a. Spikelets 0.5–1.1 mm wide; lower glumes 0.6–1 mm long; blades 1–2(–2.2) mm wide, involute, rarely flat 10. *E. lugens*
- 24b. Spikelets 1–1.8 mm wide; lower glumes 1–1.4 mm long; blades 1–4(–7) mm wide, flat or involute.
- 25a. Culms 30–90 cm tall; blades 5–40(–45) cm long; pedicels mostly appressed; sheaths 3/4 as long as the internodes above 16. *E. pastoensis*
- 25b. Culms 10–40 cm tall; blades 4–10 cm long; pedicels spreading; sheaths longer than the internodes above 21. *E. soratensis*

1. *Eragrostis tenella* (L.) P. Beauv. ex Roem. & Schult., Syst. Veg. 2: 576. 1817. Basionym: *Poa tenella* L., Sp. Pl. 1: 69. 1753. *Megastachya tenella* (L.) Bojer, Hortus Maurit. 369. 1837. TYPE: India. (lectotype, designated by Veldkamp, Blumea 47: 164. 2002, Herb. Linn. 87.33-LINN!; IDC microfiche US!). Figures 6A–D; 7A, B.

Poa amabilis L., Sp. Pl. 68. 1753. *Eragrostis amabilis* (L.) Wight & Arn., Bot. Beechey Voy. 251. 1838, hom. illeg. *Megastachya amabilis* (L.) P. Beauv., Ess. Agrostogr. 74. 167, 173. 1812. *Cynodon amabilis* (L.) Raspail, Ann. Sci. Nat., Bot. 5: 302. 1825. TYPE: Sri Lanka. *Herb. Hermann* 2: 59, no. 46 (lectotype, designated by Veldkamp in Cafferty et al., Taxon 19(2): 254. 2000, BM!; IDC microfiche US!).

Poa plumosa Retz., Observ. Bot. 4: 20. 1786. *Eragrostis plumosa* (Retz.) Link, Hort. Berol. 1: 192. 1827. *Eragrostis tenella* var. *plumosa* (Retz.) Stapf, Fl. Brit. India 7(22): 315. 1897 (1896). *Eragrostis amabilis* var. *plumosa* (Retz.) E. G. Camus & A. Camus, Fl. Indo-Chine 7: 557. 1923. TYPE: India. E. Tranquebaria, König s.n. (holotype, LD not seen; isotype, K [fragm.]).

Eragrostis ciliaris var. *patens* Chapm. ex Beal, Grasses N. Amer. 2: 479. 1896. TYPE: U.S.A. Georgia: Wayne Co., Doctortown & Jesup, Sep.–Oct. 1880, A. H. Curtiss 3193 (holotype, MSC not seen; isotypes, NY!, US 748296!, US 821866!, US 909340!).

Annual, caespitose; culms 5–40(–50) cm tall, erect to spreading, mostly glabrous and occasionally with

oblong-glandular areas below the nodes. Leaf sheaths 1/2 as long as the internodes, ciliate at the summit, collar, and along margins of the upper portion, the hairs to 4 mm long, stiff; ligules 0.2–0.3 mm, ciliate; blades 2–8 × 0.2–0.4 cm, flat to involute, glabrous below and scaberulous above, occasionally with a few scattered papillose-based hairs below. Panicles 4–15 × 1–7 cm, open, narrowly ovate, primary branches 0.5–4 cm, sometimes with irregular glandular areas below the branch bases, branches diverging 20°–100° from the rachises; pulvini ciliate or glabrous; pedicels 0.8–4(–7) mm, mostly pendent, drooping to erect. Spikelets (1–)1.5–2.2 × 0.9–1.2 mm, 4- to 8-flowered, ovate to oblong, reddish purple to greenish; disarticulation between the florets with a portion of the rachilla; glumes 0.4–1.1 mm, unequal, ovate, hyaline, keeled, the nerve commonly green, scaberulous along the keel; lower glume 0.4–0.7 mm; upper glume 0.7–1.1 mm; lemmas 0.7–1.1 mm, ovate to broadly oblong, membranous, lateral nerves evident, usually greenish, strongly keeled, scaberulous along keel; apex truncate to obtuse; paleae 0.6–1.1 mm, hyaline, keels ciliate, the cilia 0.3–0.5 mm; apex obtuse to truncate; stamens 3, anthers ca. 0.2 mm, purplish. Caryopses 0.3–0.5 mm, ellipsoid, faintly striate, elliptical to circular in cross section, translucent, light brown. 2n = 20 (Baquar & Saeed, 1969).

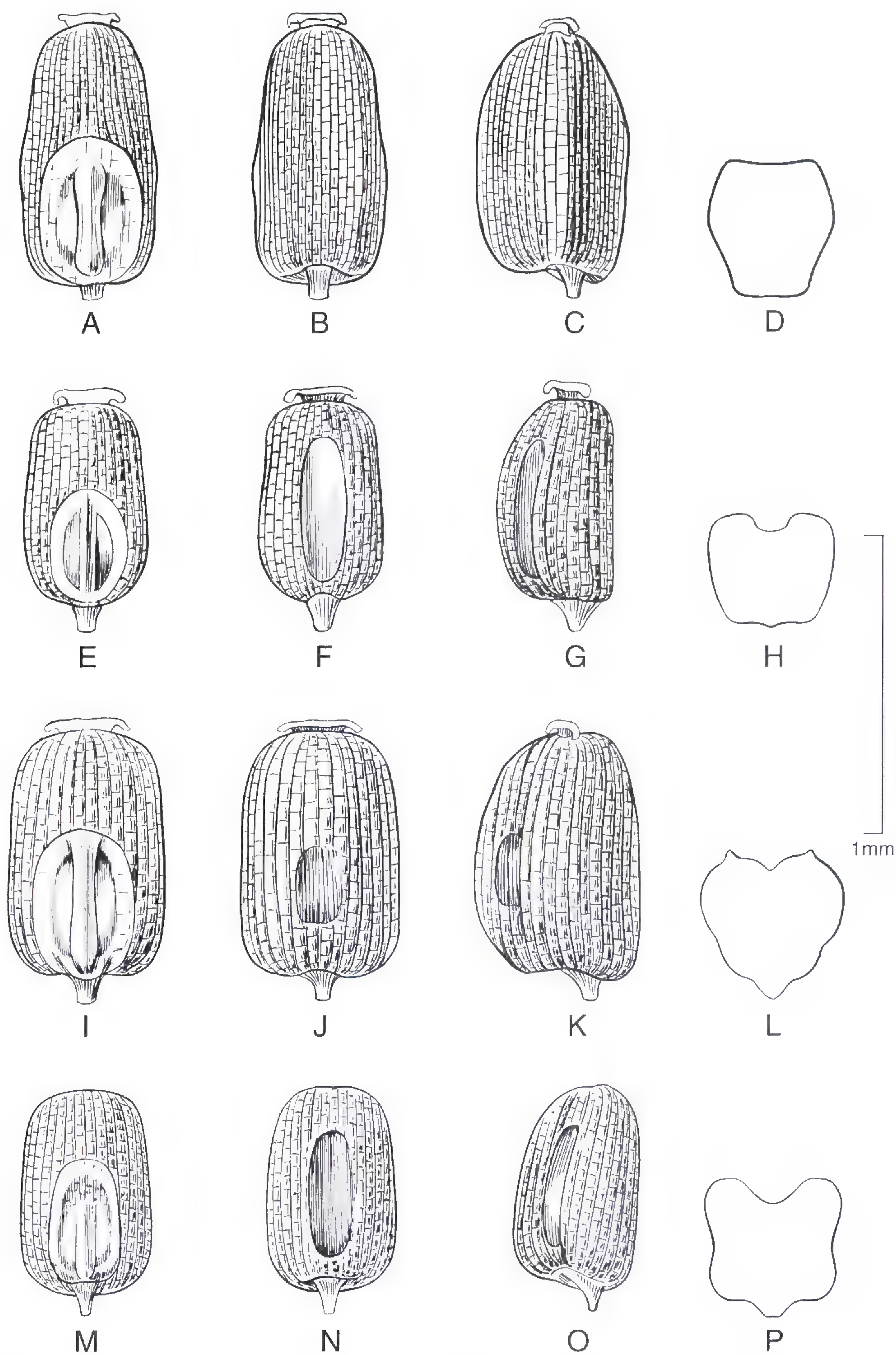


Figure 1. Caryopses of *Eragrostis* species. —A–D. *E. lurida* subsp. *lurida* (P. M. Peterson & N. F. Refulio-Rodriguez 13993). —E–H. *E. pastoensis* (P. M. Peterson & N. F. Refulio-Rodriguez 13982). —I–L. *E. lugens* (I. Sánchez Vega 3218). —M–P. *E. nigricans* (M. O. Dillon, U. Molau & P. Matekaitis 3258). Dorsal views (A, E, I, M); ventral views (B, F, J, N); lateral views (C, G, K, O); cross sections (D, H, L, P).

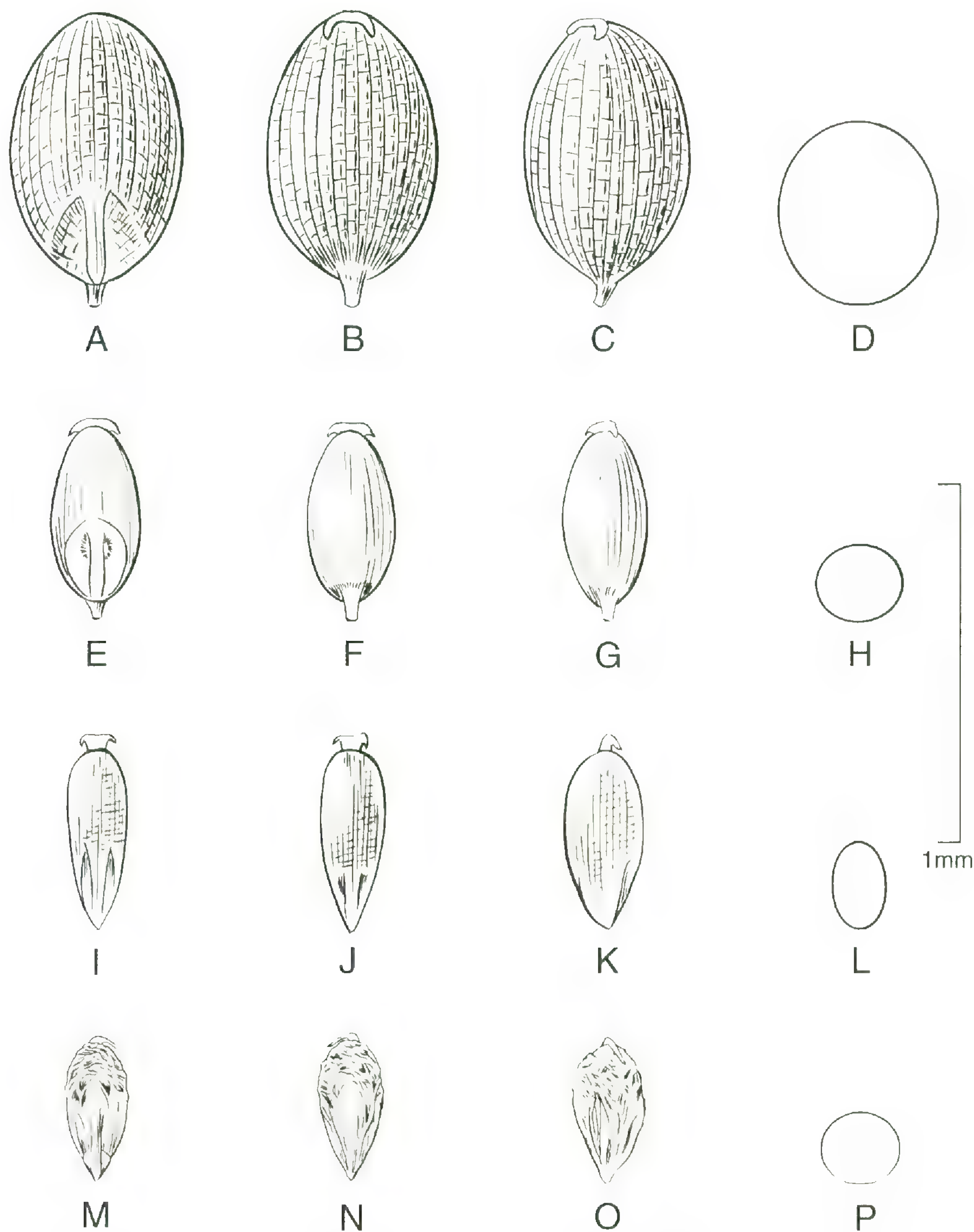


Figure 2. Caryopses of *Eragrostis* species. —A–D. *E. cilianensis* (R. Ferreyra 6017). —E–H. *E. ciliaris* (A. Sagástegui A. 10927). —I–L. *E. hypnoides* (A. López M. & A. Sagástegui A. 4023). —M–P. *E. japonica* (E. Asplund 14802). Dorsal views (A, E, I, M); ventral views (B, F, J, N); lateral views (C, G, K, O); cross sections (D, H, L, P).

Distribution and habitat. Native in India; introduced in U.S.A., Mexico, Central America, Caribbean, Brazil, Bolivia, Colombia, Ecuador, Guianas, Paraguay, Peru, and Venezuela (Nicora, 1998; Peterson & Boechat, 2001); occurs in open areas near cultivated fields, dry forests, and along roadsides only in northwestern Peru; 0–1500 m.

Phenology. Flowering October through May.

Specimens examined. PERU. **Amazonas:** Prov. Bagua, Chiriaco–Nazareth, F. Holle 20575 (USM). **Cajamarca:** Prov. Jaén, 1 km N of Chamayo on Hwy. 5N toward Jaén, P.

M. Peterson & N. F. Refulio-Rodriguez 15056 (US, USM); 6 km W of Hwy. 5N up Río Tabaconas toward Tamborillo, P. M. Peterson & N. F. Refulio-Rodriguez 15087 (US, USM). **Lambayeque:** Prov. Lambayeque, betw. Chochope & La Ramada, J. T. Columbus, J. M. Porter & E. H. Roalson 3442 (RSA, US); Prov. Lambayeque, El Porvenir (Olmos), S. Llatas Q. 1180 (US). **Piura:** Prov. Piura, 15 km entre Piura y Sullana, I. Sánchez Vega & J. Guevara 6191 (CPUN, US). **Tumbes:** Prov. Contralmirante Villar, SE de Zorritos, R. Ferreyra 12268 (US).

2. *Eragrostis andicola* R. E. Fr., Nova Acta Regiae Soc. Sci. Upsal., ser. 4, 1(1): 180. 1905. TYPE: Argentina. Prov. Jujuy: Moreno, “in

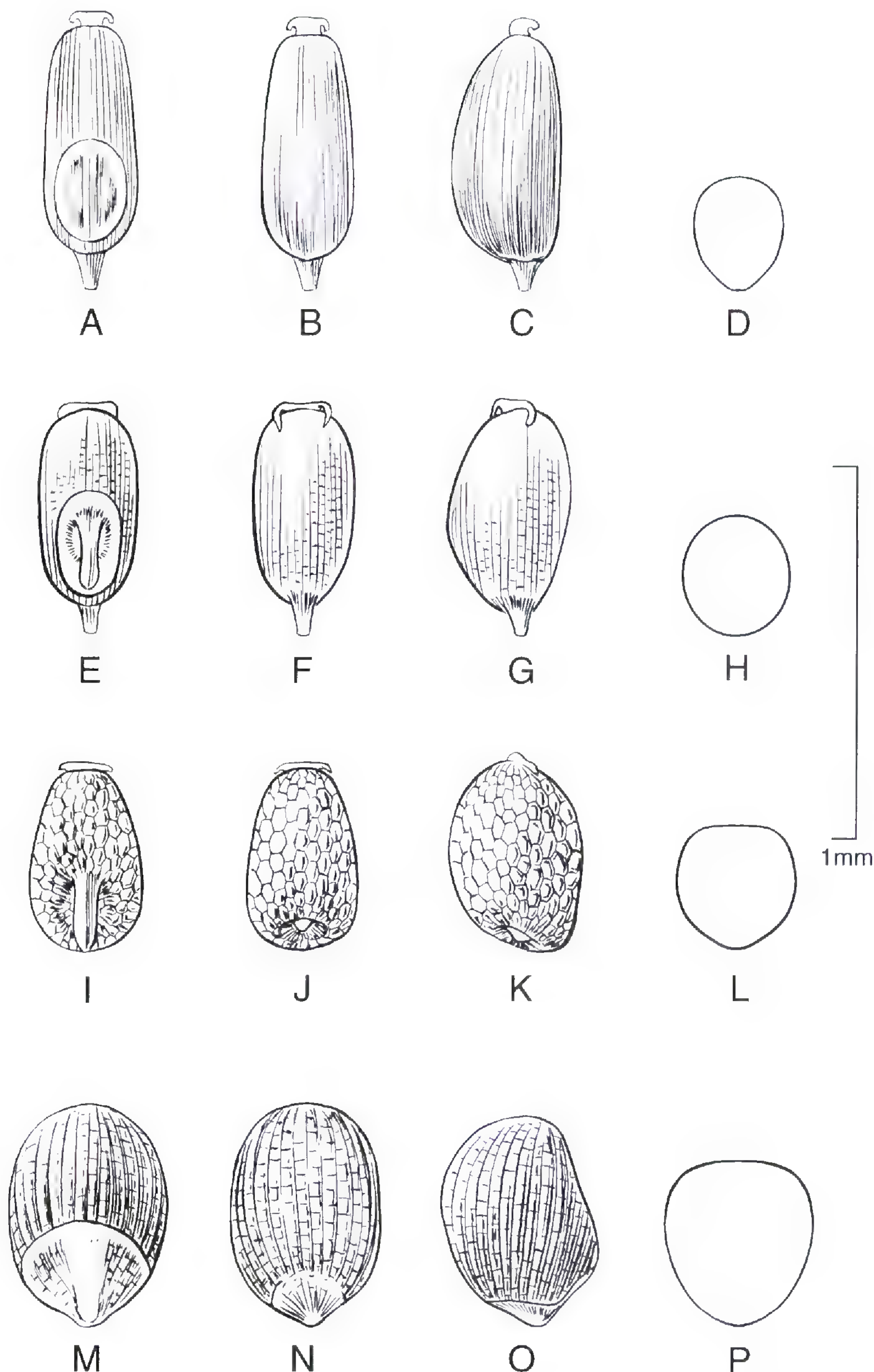


Figure 3. Caryopses of *Eragrostis* species. —A–D. *E. attenuata* (R. Ferreyra 6366). —E–H. *E. weberbaueri* (J. T. Columbus, J. M. Porter & E. H. Roalson 3523). —I–L. *E. maypurensis* (C. M. Belshaw 3359). —M–P. *E. peruviana* (M. O. Dillon, P. Matekaitis & L. Watanabe 3342). Dorsal views (A, E, I, M); ventral views (B, F, J, N); lateral views (C, G, K, O); cross sections (D, H, L, P).

montibus saxosis apreicis siccis,” 3500–3700 m, 15 Dec. 1901, R. E. Fries 924 (lectotype, designated here, UPS!; isotypes, BAA!, CORD, US 2891444 [fragm.] ex S!). Figures 4E–H; 8A–C.

Perennial, caespitose with thick roots; culms 13–50 cm tall, erect, mostly glabrous and sometimes

with small oblong glands located on the veins, 1 node per culm. Leaf sheaths 1–1 1/2 as long as the internode below, ciliate at the summit, collar, and usually the margins above to pilose throughout, the papillose-based hairs up to 4 mm, stiff; with small oblong glands located on the veins; ligules 1–1.5 mm, ciliate; blades (3–)5–12 × 0.15–0.3 cm, flat to involute, strongly divaricate, with scattered

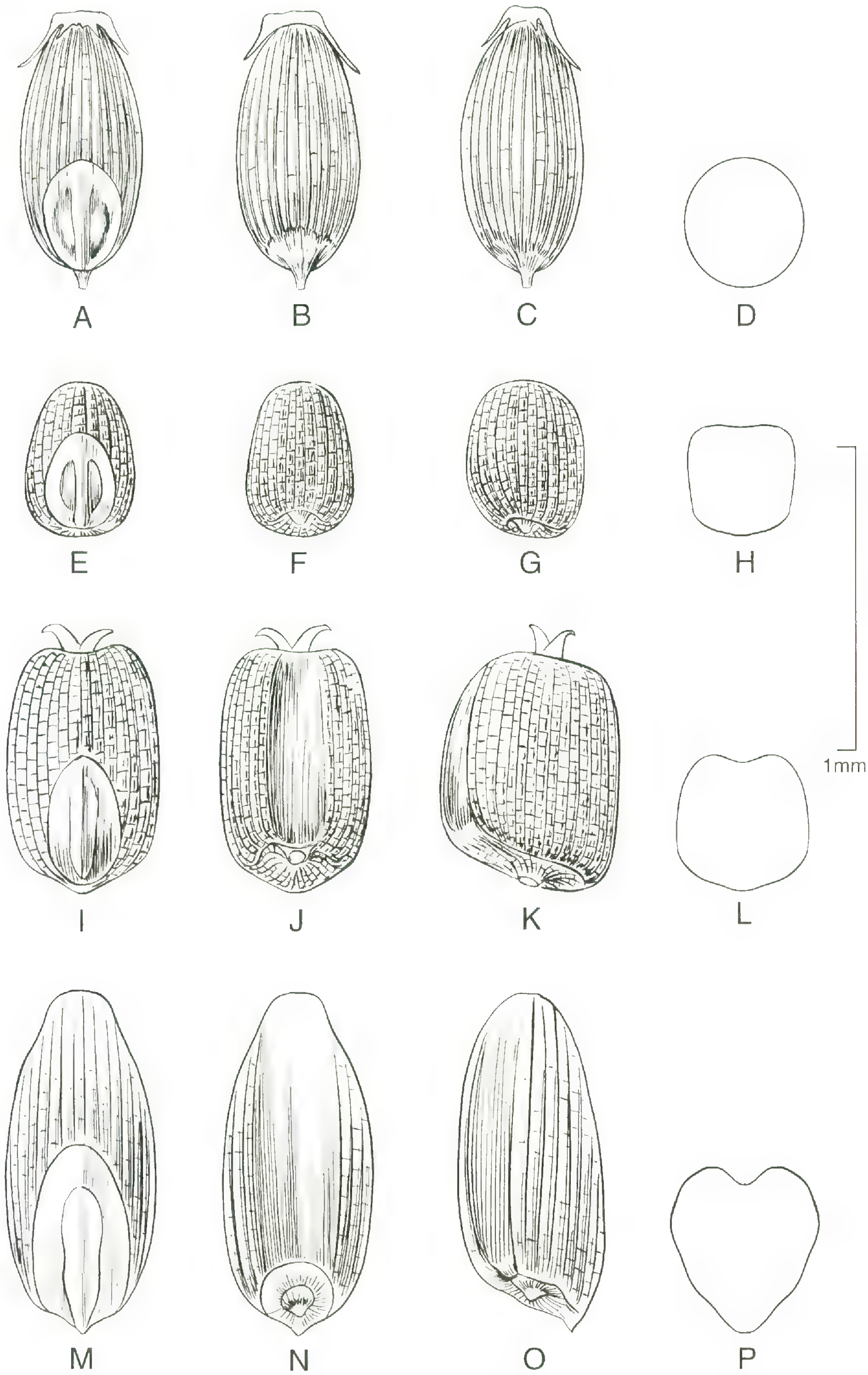


Figure 4. Caryopses of *Eragrostis* species. —A–D. *E. atrovirens* (I. Sánchez-Vega 9651). —E–H. *E. andicola* (J. F. Mabride 3516). —I–L. *E. pilgeri* subsp. *ancashensis* (P. M. Peterson & N. F. Refulio-Rodriguez 13793). —M–P. *E. pilgeri* subsp. *pilgeri* (I. Sánchez-Vega & V. Torrel 2380). Dorsal views (A, E, I, M); ventral views (B, F, J, N); lateral views (C, G, K, O); cross sections (D, H, L, P).

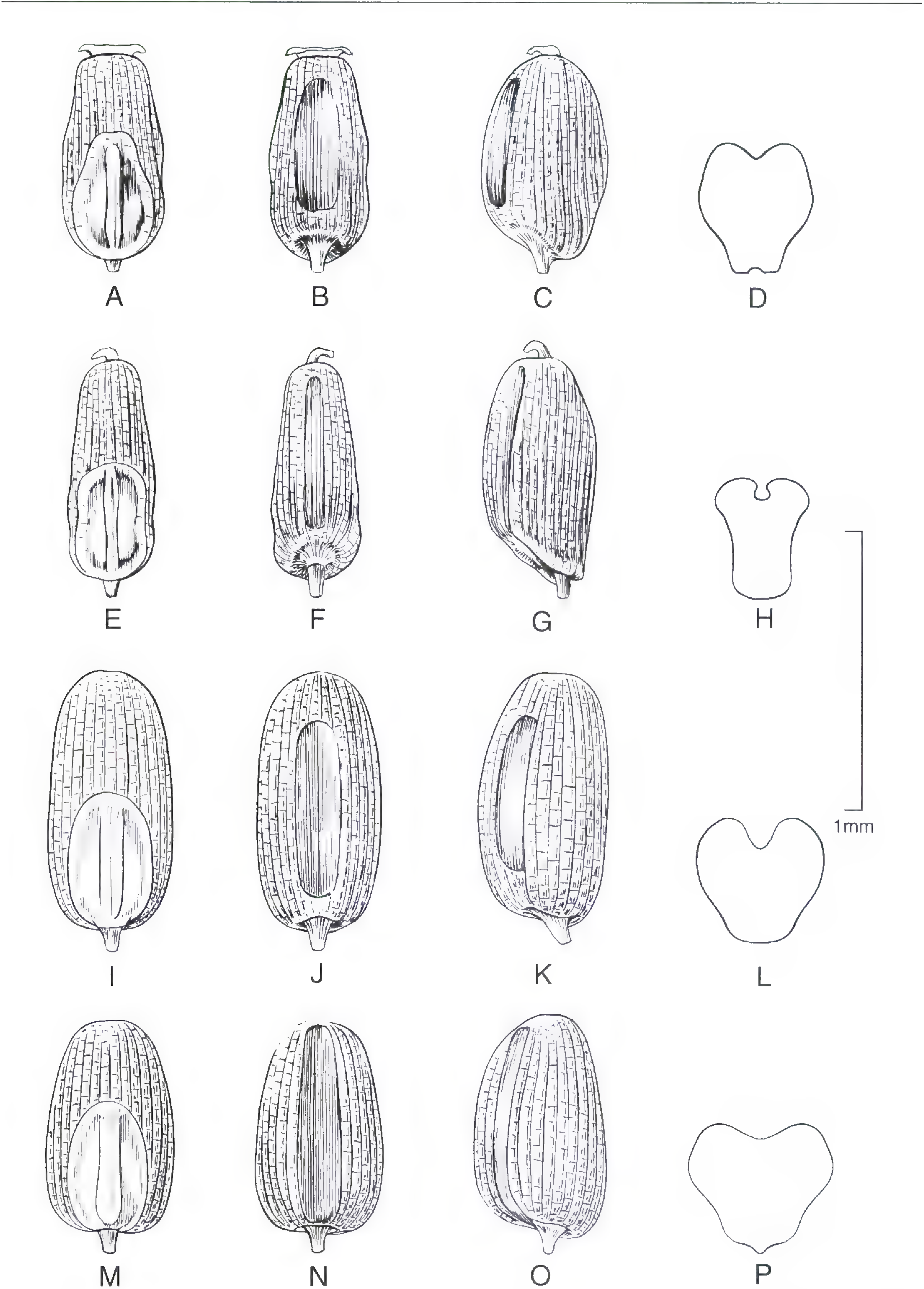


Figure 5. Caryopses of *Eragrostis* species. —A–D. *E. soratensis* (P. M. Peterson, N. F. Refulio Rodriguez & F. Salvador Pérez 14625). —E–H. *E. magna* (J. F. MacBride 4069 & P. M. Peterson & N. F. Refulio-Rodriguez 16515). —I–L. *E. mexicana* subsp. *mexicana* (I. Sánchez-Vega 4020). —M–P. *E. mexicana* subsp. *virescens* (I. Sánchez-Vega 2301). Dorsal views (A, E, I, M); ventral views (B, F, J, N); lateral views (C, G, K, O); cross sections (D, H, L, P).

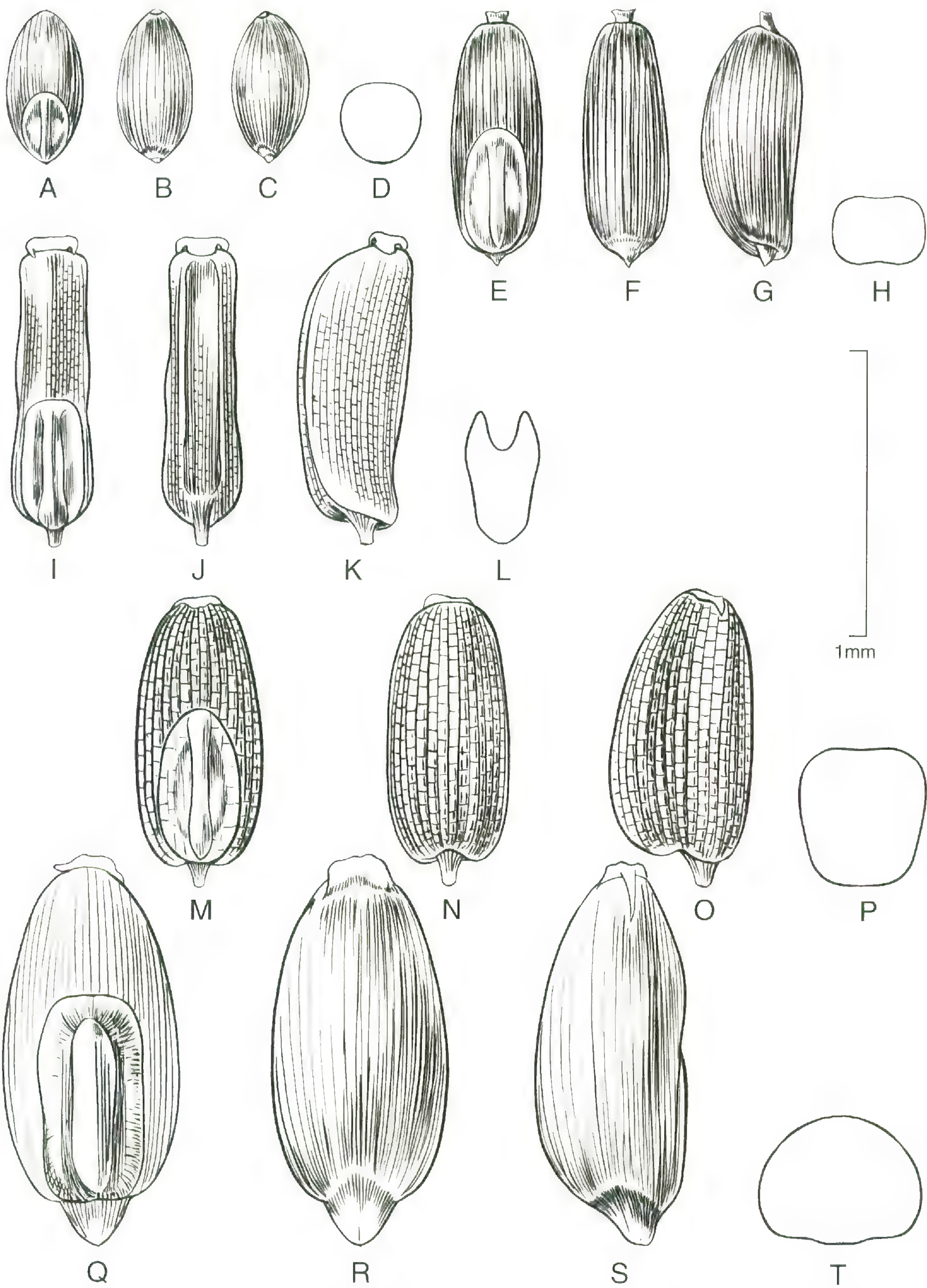


Figure 6. Caryopses of *Eragrostis* species. —A–D. *E. tenella* (S. Llatas Q. 1180). —E–H. *E. pilosa* (S. Llatos 1107). —I–L. *E. tenuifolia* (P. Nuñez V. & E. Bengoa 8731). —M–P. *E. pectinacea* (P. M. Peterson & N. F. Refulio-Rodriguez 13981). —Q–T. *E. curvula* (J. R. Reeder & C. G. Reeder 7311). Dorsal views (A, E, I, M, Q); ventral views (B, F, J, N, R); lateral views (C, G, K, O, S); cross sections (D, H, L, P, T).

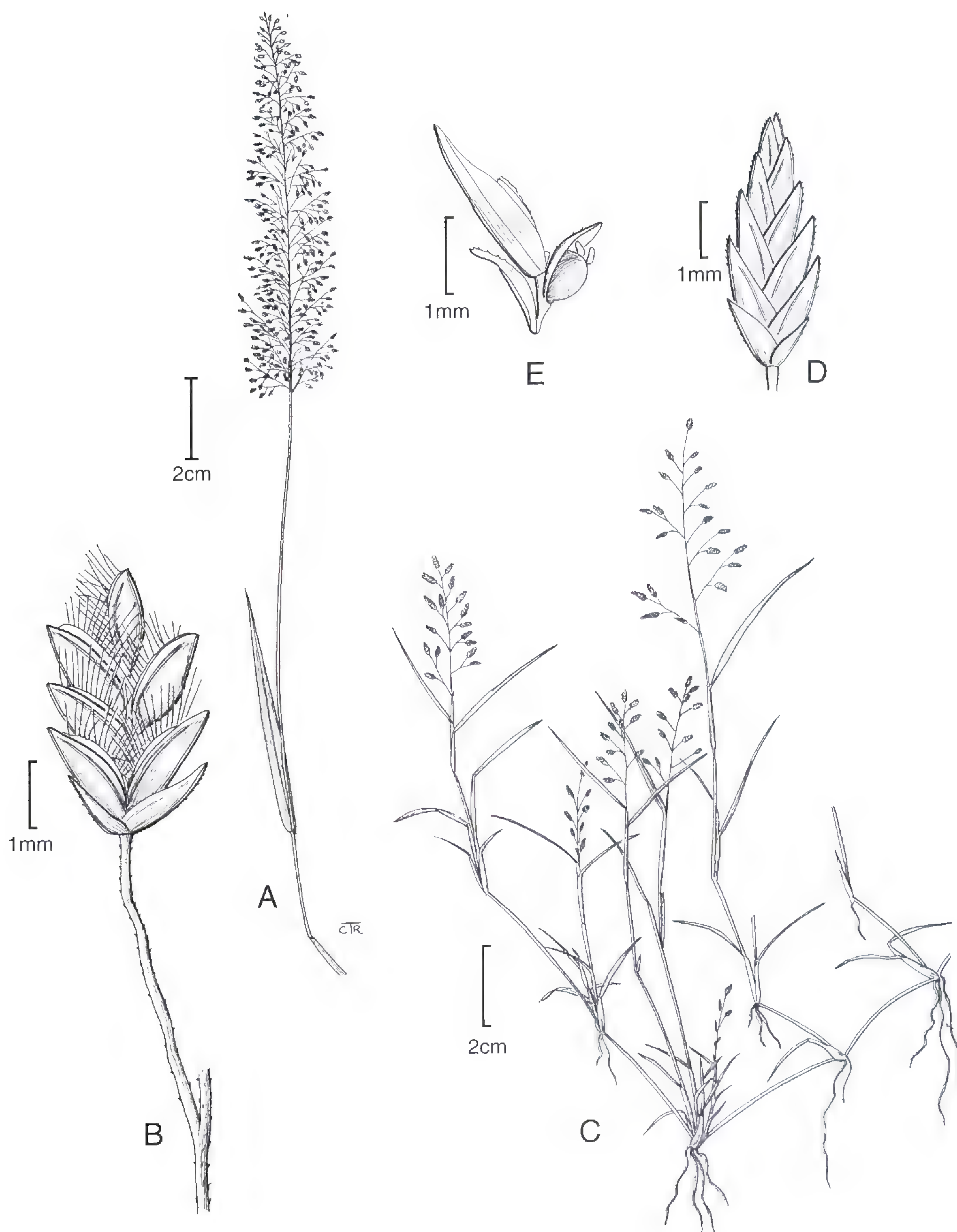


Figure 7. *Eragrostis tenella*. —A. Habit. —B. Spikelet. *Eragrostis hypnoides*. —C. Habit. —D. Spikelet. —E. Rachilla showing a palea and floret (left) and a palea and caryopsis (right).

small oblong glands located above the abaxial veins near the base, scaberulous above and pilose abaxially to glabrous, the papillose-based hairs up to 4 mm long. Panicles (6–)9–20 × 5–10 cm, oblong, open, primary branches 2–8 cm with glandular bands below the branch bases, 1 or 2 per node, the branches spreading 45°–90° from the rachises;

secondary panicle branches composed of loosely overlapping spikelets; pulvini glabrous to sparingly ciliate; pedicels 1.8–5 mm, divaricate at maturity with a single glandular band near the middle, stout, scabrous. Spikelets 4–9 × 1.8–2.2 mm, 3- to 12-flowered, ovate-lanceolate, plumbeous to purplish; rachilla somewhat flattened with a few short,

scattered hairs mostly near the base; disarticulation acropetal, glumes first then lemmas, paleae persistent; glumes 1.2–2.4 mm, subequal ovate to lanceolate, membranous, usually purplish with hyaline margins; lower glume 1.2–2 mm, narrower than the upper; upper glume (1.8–)2–2.4 mm; lemmas 2–2.8 mm, ovate, membranous, plumbeous, lateral veins not evident, scaberulous along keel and near the apex; apex obtuse, occasionally mucronate, the mucro less than 0.2 mm; paleae 1.2–2.4 mm, shorter than the lemma, membranous, scaberulous; apex obtuse to truncate; stamens 3, anthers 0.4–0.6 mm, yellowish. Caryopses ca. 0.5–1 mm, rectangular-prismatic, striate and reticulate, rectangular with nearly equal sides in cross section, without a readily apparent ventral groove or with a shallow ventral groove.

Distribution and habitat. Native to northwestern Argentina, this is the first report in Peru from Departamentos Huánuco and Lima (Nicora, 1998); loose shale outcrops and gravelly river flats; 2100–2500 m.

Phenology. Flowering November through April.

Comments. This is the first record of this species for Peru, and, until now, *Eragrostis andicola* was known only from the province of Jujuy in northwestern Argentina. The Peruvian specimens are taller than specimens from Argentina where Nicora (1998) lists the culms as being 13–30 cm. Otherwise, important diagnostic characters of this species include the pedicels with a single glandular band near the middle, blades with scattered, small oblong glands located abaxially above the veins, and sheaths/blades with stiff, papillose-based hairs.

The specimen *R. E. Fries* 924 at UPS has been selected as the lectotype because it is deposited at the institution in which the author worked and deposited types.

Specimens examined. ARGENTINA. **Jujuy:** Moreno, *R. E. Fries* 924a (syntype, BAA 998, CORD). PERU. **Huánuco:** *J. F. Macbride* 3516 (F, US). **Lima:** Prov. Huarochirí, Matucana, *J. F. Macbride* 2926 (F, US).

3. *Eragrostis atrovirens* (Desf.) Trin. ex Steud., Nom. Bot. (ed. 2) 1: 562. 1840. Basionym: *Poa atrovirens* Desf., Fl. Atlant. 1: 73, t. 14. 1798. TYPE: Algeria. E. Barbaria, *Desfontaines* 160 (holotype, FI not seen; isotypes, BAA 1006!, LE!, P!). Figures 4A–D; 9A, B.

Perennial, caespitose; culms (70–)75–130 cm tall, erect to geniculate at base. Leaf sheaths 1/3–2/3 as long as the internodes, glabrous, long ciliate at summit, the hairs up to 4 mm; ligule 0.1–0.3 mm,

ciliate; blades (5–)8–20 × (0.1–)0.2–0.3(–0.4) cm, flat to involute, glabrous below and scaberulous above, long ciliate at base. Panicles (7–)10–20(–28) × (2.5–)4–15 cm, open, ovate, primary branches (3–)5–10(–13) cm, wiry, somewhat capillary, naked basally, branches diverging 20°–60° from the rachises; pulvini glabrous to sparingly ciliate, the hairs less than 2 mm; pedicels 1–10 mm, appressed, scaberulous. Spikelets 6–10(–19) × 1.4–2.4 mm, 10- to 22-flowered, ovate-lanceolate, plumbeous to purplish; disarticulation acropetal, glumes first, then the florets; glumes 1.2–1.7 mm, subequal, lanceolate to ovate, membranous; lower glume 1.2–1.4 mm, narrower than upper glume; upper glume 1.4–1.7 mm; lemmas (1.5–)1.7–2 mm, broadly ovate, leathery, lateral veins evident, scaberulous along keel; apex acute; paleae 1.4–1.9 mm, hyaline, scaberulous along keels; apex acute to obtuse; stamens 3, anthers 0.7–0.9 mm, reddish purple. Caryopses 0.6–0.9 mm, obovoid to ellipsoid, opaque, striate and minutely reticulate, circular in cross section, without a ventral groove, reddish brown. $2n = 20, 40, 60$ (Bir & Sahni, 1988).

Distribution and habitat. Native in northern Africa and Asia; introduced in U.S.A., Mexico, Central America, Caribbean, Bolivia, Chile, Argentina, Peru, and Venezuela (Nicora, 1998; Peterson & Boechat, 2001); railways, roads, beaches, and ditches, often in wet sandy soils of Amazonian region; 1–700 m.

Phenology. Flowering January through February.

Specimens examined. PERU. **Huánuco:** Prov. Leoncio Prado, Dist. Rupa Rupa, *I. Sánchez-Vega* 9651 (CPUN, US). **Loreto:** Prov. Maynas, Iquitos, carretera to Santo Tomás, *M. Rimachi* Y. 8470 (US).

4. *Eragrostis attenuata* Hitchc., Contr. U.S. Natl. Herb. 24(8): 340. 1927. TYPE: Peru. Arequipa: sandy slopes of hills ca. 3 km back of Mollendo, 17 Nov. 1923, *A. S. Hitchcock* 22424 (holotype, US 1164909!; isotypes, BAA 1007!, US 1164361!). Figures 3A–D; 10A–C.

Sporobolus scaber Phil., Fl. Atacam. 54. 1860. TYPE: Chile. Cachinal de la Costa, 1900 m. *R. Philippi* 118 (holotype, SGO-PHIL 118 not seen; isotypes, BAA 2928 [fragm.], SGO 45543 not seen, US 2891484 [fragm.] ex SGO-PHIL 118! & photo!).

Perennial, caespitose, forming innovations at the base; culms 15–40(–60) cm tall, stiffly, erect to widely spreading, geniculate below, glabrous, not branched at the upper nodes, innovations extravaginal formed below. Leaf sheaths nearly as long as the internodes above, ciliate at the summit with fine white hairs at the throat and along margins,



Figure 8. *Eragrostis andicola* (J. F. Macbride 2926, 3516). —A. Habit. —B. Sheath and blade. —C. Spikelet. *Eragrostis lurida* subsp. *contracta* (P. M. Peterson & N. F. Refulio-Rodriguez 13917A). —D. Panicle. —E. Spikelet.

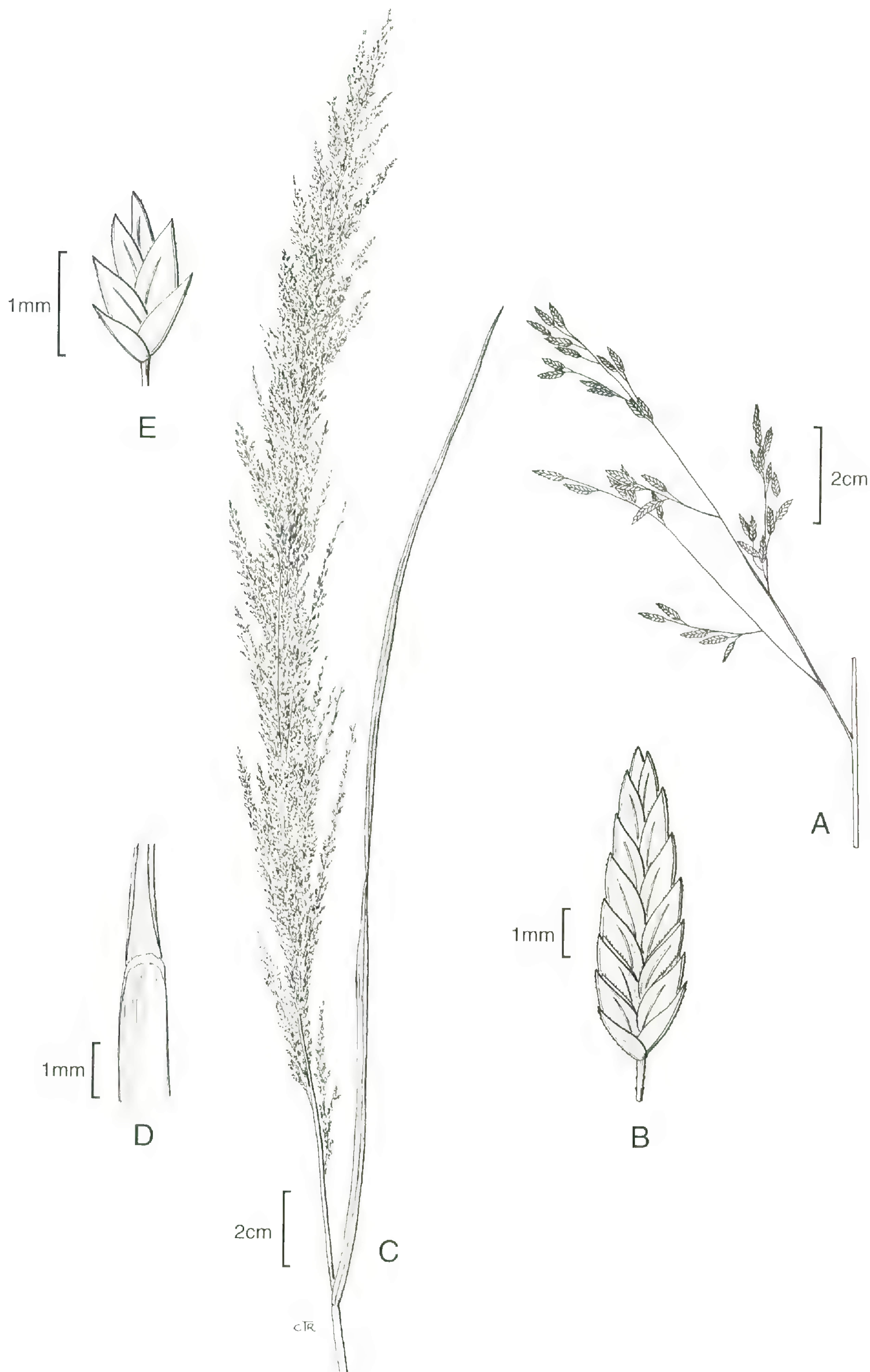


Figure 9. *Eragrostis atrovirens*. —A. Panicle branch. —B. Spikelet. *Eragrostis japonica*. —C. Panicle and flag leaf. —D. Ligule. —E. Spikelet.



Figure 10. *Eragrostis attenuata* (M. O. Dillon & D. Dillon 3879). —A. Habit. —B. Panicle branch. —C. Spikelet. *Eragrostis nigricans* (P. M. Peterson & N. F. Refulio-Rodriguez 13855). —D. Habit. —E. Panicle branch. —F. Spikelet.

sometimes with similar hairs on the collar; ligule ca. 1 mm, ciliate; blades 3–7 × 0.2–0.3 cm, flat or involute when dry, short pilose, the hairs 0.4–1.5 mm, shiny, whitish, and minutely tuberculate at base. Panicles 10–25(–40) × 0.2–0.5 cm, closed, densely flowered, cylindrical and narrowly spicate, interrupted below, rachis glabrous, primary branches 1–1.5(–4) cm, ascending and tightly appressed, solitary, flowered to the base; pedicels 1–1.5 mm, short, appressed. Spikelets 2.5–4 × 0.9–1.1 mm, (1 to)3- to 4(to 6)-flowered, oblong to oval, dark reddish purple, florets imbricate; disarticulation between the florets with rachilla joint attached; glumes 0.8–1.4 mm, unequal, hyaline, lanceolate to acuminate, slightly keeled; lower glume 0.8–1 mm; upper glume 1–1.4 mm, 1-nerved, scaberulous along the keel; lemmas 1.2–1.8 mm, ovate to ovate-lanceolate, scabrous throughout, keeled, lateral nerves conspicuous, scaberulous; apex obtuse; paleae 1.1–1.3 mm, nearly as long as lemma, keels minutely scaberulous; apex acute to obtuse; stamens 3, anthers ca. 0.3 mm. Caryopses 0.6–0.8 mm, ellipsoid, striate, laterally flattened, elliptical in cross section, reddish brown, smooth, not grooved ventrally.

Distribution and habitat. Endemic along the coast of southern Peru south to northern Chile (Nicora, 1998; Peterson & Boechat, 2001); occurs in lomas vegetation; 5–1000 m.

Phenology. Flowering September through November.

Specimens examined. PERU. **Arequipa:** Prov. Arequipa, Pampas de la Joya, C. Vargas C. 017943 (CUZ); Prov. Camaná, ca. 32 km SE of Camaná, M. O. Dillon & D. Dillon 3879 (F, US); Prov. de Caravelí, lomas de Arequipa, R. Ferreyra 6478 (US, USM); Prov. Islay, near the Puerto Mollendo, I. M. Johnston 3538 (US). **Ica:** Prov. Nasca, Lomas de Marcona, R. Ferreyra 13371 (US, USM).

5. *Eragrostis cilianensis* (All.) Vignolo ex Janch., Mitt. Naturwiss. Vereins Univ. Wien. n.s., 5: 110. 1907. Basionym: *Poa cilianensis* All., Fl. Pedem. 2: 246. 1785. *Eragrostis megastachya* var. *cilianensis* (All.) Asch. & Graebn., Syn. Mitteleur. Fl. 2: 371. 1900. *Eragrostis cilianensis* (All.) F. T. Hubb., Philipp. J. Sci. 8(3): 159–161. 1913. *Erosion cilianense* (All.) Lunnell, Amer. Midl. Naturalist 4: 221. 1937. *Eragrostis multiflora* var. *cilianensis* (All.) Maire, Bull. Soc. Hist. Nat. Afrique N. 30: 369. 1939. TYPE: Italy. Ciliani, Bellardi s.n. (lectotype, designated by Vignolo, Malpighia 18: 380. 1904, TO 8242 not seen; isotypes, BRI not seen, K photo neg. 1957!). Figures 2A–D; 11A–C.

Annual, caespitose; culms 15–45(–65) cm tall, erect or decumbent and prostrate, glabrous and shiny, sometimes with crateriform glands below the nodes. Leaf sheaths 2/3 the length of the internodes above, occasionally longer, glabrous, occasionally glandular, densely ciliate at the summit, the hairs often elongate up to 5 mm; ligules 0.4–0.8 mm, ciliate; blades (1–)5–20 × (0.1–)0.3–0.5(–1) cm, flat to loosely involute, mostly glabrous below, scaberulous above occasionally with widely spaced elongate hairs, sometimes glandular near margins. Panicles (3–)5–16(–20) × 2–8.5 cm, condensed to open, oblong to ovate, primary branches 0.4–5 cm, ascending, appressed or diverging 20–80° from the rachises; pulvini glabrous or ciliate; pedicels 0.2–3 mm, erect, spreading to appressed. Spikelets 6–20 × 2–4 mm, 10- to 40-flowered, ovate-lanceolate, florets imbricate, plumbous to greenish or hyaline; disarticulation acropetal, between the florets from the base upward, usually the entire floret, rachillas persistent; glumes 1.2–2.6 mm, subequal, broadly ovate to lanceolate, subhyaline, membranous, keeled, usually with crateriform glands along the keel, 1- or 3-nerved, scaberulous toward apex of keel; lower glume 1.2–2 mm, usually 1-nerved; upper glume 1.2–2.6 mm, often 3-nerved; lemmas 2–2.8 mm, broadly ovate, membranous, lateral nerves evident, strongly keeled, keels with 1 to 3 crateriform glands; apex obtuse to acute; paleae 1.2–2.1 mm, hyaline, keels scaberulous, sometimes ciliate, the cilia less than 0.3 mm; apex obtuse to acute; stamens 3, anthers 0.2–0.5 mm, yellow. Caryopses 0.5–0.7 mm, globose to broadly short ellipsoid, striate and reticulate, circular to elliptical in cross section, reddish brown. $2n = 20, 40$ (Bir & Sahni, 1988).

Distribution and habitat. Native to Europe; introduced in southern Canada, U.S.A., Mexico, Central America, Caribbean, Argentina, Bolivia, Brazil, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela (Laegaard & Peterson, 2001; Peterson & Boechat, 2001); a weed near cultivated fields, pastures, roadsides, and disturbed habitats; 0–3000 m.

Phenology. Flowering March through July.

Comments. Specimens from the provinces of Azuay and Loja, Ecuador, have elongate hairs on the adaxial surface of the blades and lack crateriform glands on the spikelets, whereas specimens from other provinces in Ecuador and throughout South America lack the elongate hairs on the blades and generally have crateriform glands on the spikelets (Laegaard & Peterson, 2001).

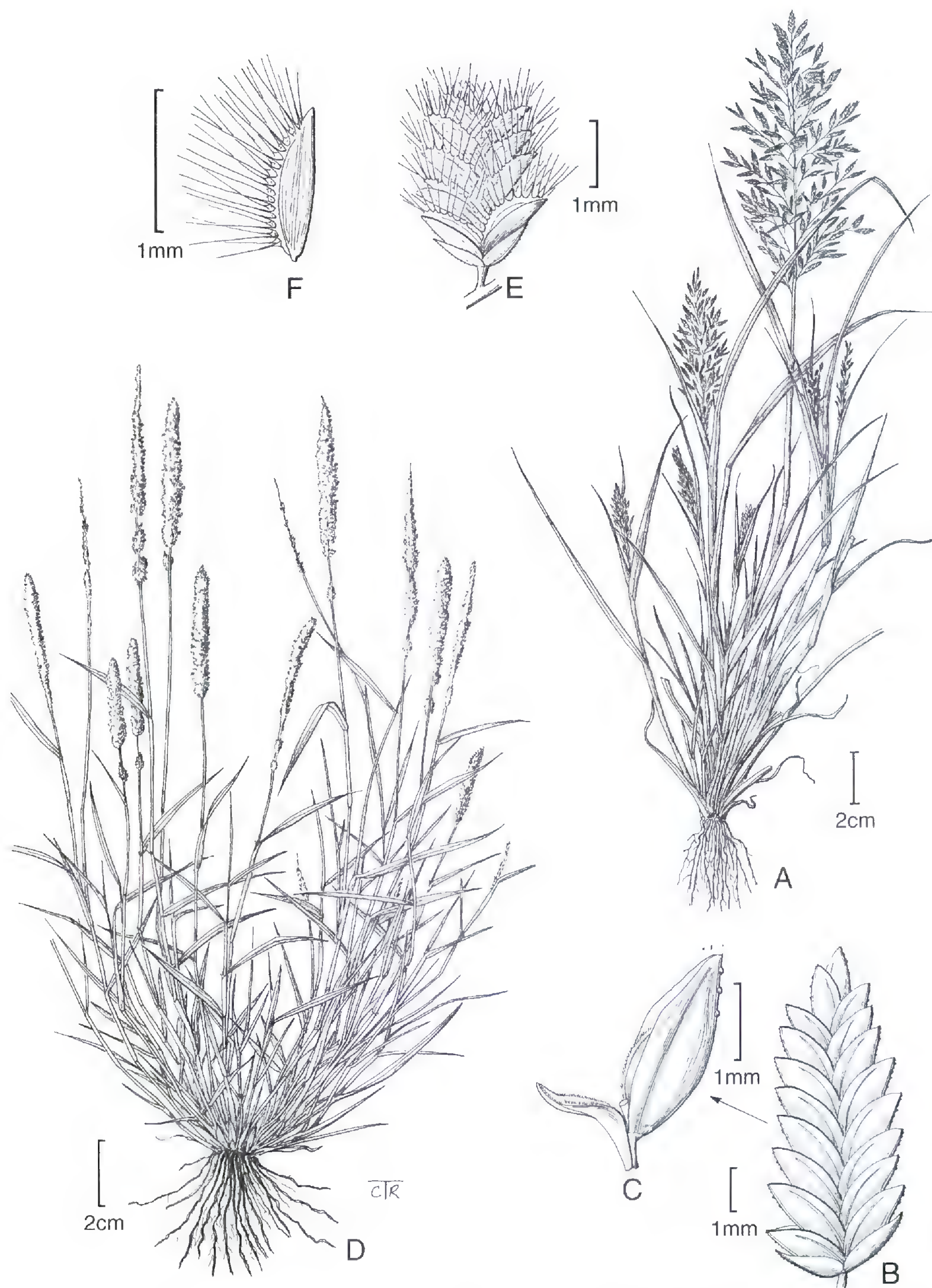


Figure 11. *Eragrostis cilianensis*. —A. Habit. —B. Spikelet. —C. Rachilla showing palea (left) and floret (right). *Eragrostis ciliaris*. —D. Habit. —E. Spikelet. —F. Palea.

Specimens examined. PERU. **Arequipa:** Prov. Castilla, Paccai-chacra, C. Vargas C. 019367 (CUZ). **Cajamarca:** Prov. Cajamarca, 40 km N of Cajabamba & 13 km S of Ichocan, P. M. Peterson & N. F. Refulio-Rodriguez 14004 (US, USM); Prov. Contumazá, entre Chilete y Tembladera, I. Sánchez Vega & W. Ruiz V. 665 (CPUN); Prov. Jaén, 1 km N of Chamayo on Hwy. 5N toward Jaén, P. M. Peterson & N. F. Refulio-Rodriguez 15045 (US, USM). **Ica:** Prov. Nasca,

15 km NW of Nasca along Hwy. 1, J. T. Columbus, J. M. Porter & E. H. Roalson 3519 (RSA, US). **La Libertad:** Prov. Pacasmayo, entre Paiján y San Pedro, D. N. Smith 4226 (US). **Lambayeque:** Prov. Chiclayo, Tucumán-Chongoyape, A. Sagástegui A. et al. 11468 (US); Prov. Lambayeque, betw. Lambayeque & Motupe, J. T. Columbus, J. M. Porter & E. H. Roalson 3439 (RSA, US). **Lima:** Prov. Chancay, al E del valle de Sayán, T. H. Goodspeed 33034

(US). **Moquegua:** Prov. Moquegua, entre Moquegua y Torata, A. Weberbauer 7138 (US). **Piura:** Prov. Huancabamba, 10 km N of Sondor & 3 km S of Huancabamba, P. M. Peterson & N. F. Refulio-Rodriguez 15169 (US, USM); Pabur, Buenos Aires, R. Ferreyra 6017 (US, USM); 15 km entre Piura y Sullana, E de la carretera Panamericana, I. Sánchez Vega & J. Guerara B. 6188 (CPUN, HAO). **Tumbes:** Caleta Santa Cruz, entre Tumbes y Zorritos, R. Ferreyra 10693 (US, USM).

6. **Eragrostis ciliaris** (L.) R. Br. var. **ciliaris**, Narr. Exped. Zaire 478. 1818. Basionym: *Poa ciliaris* L., Syst. Nat. (ed. 10) 875. 1759. *Megastachya ciliaris* (L.) P. Beauv., Ess. Agrostogr. 74, 167, 174. 1812. *Cynodon ciliaris* (L.) Raspail, Ann. Sci. Nat., Bot. 5: 302. 1825. *Eragrostis ciliaris* (L.) Nees, Fl. Bras. Enum. Pl. 2: 512–514. 1829. TYPE: Jamaica. Browne s.n. (lectotype, designated by Hitchcock, Contr. U.S. Natl. Herb. 12: 121. 1908. LINN 87.66!). Figures 2E–H; 11D–F.

Annual, caespitose; culms (3–)9–75 cm tall, erect or geniculate in the lower portion, not rooting at the lower nodes, glabrous. Leaf sheaths 1/2–3/4 as long as the internodes, hairy on the margins and at the apices, hairs to 4 mm; ligules 0.2–0.5 mm; blades 1.8–12(–15) × 0.2–0.5 cm, usually flat, occasionally involute, glabrous or ciliate basally. Panicles 1.7–17 × 0.2–1.5 cm, cylindrical, contracted, spike-like, branches forming glomerate lobes or sometimes more open, often interrupted in the lower portion; primary branches 0.4–4 cm, ascending, tightly appressed; pulvini usually glabrous, occasionally sparsely pilose; pedicels 0.1–1 mm, erect, shorter than the spikelets, glabrous. Spikelets 1.8–3.2 × 1–2 mm, 6- to 11-flowered, elliptical-ovate to ovate-lanceolate, yellowish brown, sometimes with a purple tinge, densely packed next to one another forming glomerate lobes; disarticulation basipetal, glumes persistent; glumes 0.7–1.6 mm, subequal, ovate to lanceolate, keels scabridulous, veins commonly green, apices acute; lower glume 0.7–1.2 mm; upper glume 1–1.6 mm; lemmas 0.8–1.3 mm, elliptical-ovate to lanceolate, membranous, keels scabridulous, lateral veins evident; apex obtuse to acute; paleae 0.8–1.3 mm, membranous, keels prominently ciliate, cilia 0.2–0.8 mm, stiff and pectinate-thickened near base; apex obtuse to acute; stamens 2, anthers 0.1–0.3 mm, purplish. Caryopses 0.4–0.5 mm, ovoid, striate, slightly dorsally flattened, elliptical in cross section, reddish brown. $2n = 20$, 40 (Bir & Sahni, 1988).

Distribution and habitat. Apparently native to the Paleotropics; introduced and naturalized in Mexico, U.S.A., Central America, Caribbean, Argentina, Bolivia, Colombia, Ecuador, Guianas, Paraguay, Peru,

and Venezuela (Nicora, 1998; Peterson & Boechat, 2001); growing along roadsides, on waste sites, in xerothermic vegetation, and sometimes in saline habitats; 0–1400 m.

Phenology. Flowering October through July.

Specimens examined. PERU. **Cajamarca:** Prov. Cajamarca, entre Cajamarca y Cumbe Mayo, W of Cajamarca, I. Sánchez Vega 4125 (CPUN); Prov. Jaén, 6 km W of Hwy. 5N up Río Tabaconas toward Tamborillo, P. M. Peterson & N. F. Refulio-Rodriguez 15085 (US, USM); 1 km N of Chamayo on Hwy. 5N toward Jaén, P. M. Peterson & N. F. Refulio-Rodriguez 15046 (US, USM); Prov. San Ignacio, confluencia del Río Tamboraza–Chinchipe, E. Anderson 1057 (US). **Cusco:** Prov. Convención, Echarati, C. Vargas C. 21288 (CUZ). **Huánuco:** Prov. Leoncio Prado, Tingo María, H. A. Hallar 20709 (US). **Junín:** Prov. Chanchamayo, San Ramón, O. Velarde 2840 (US). **La Libertad:** Prov. Trujillo, Mócan, Hacienda Casagrande, A. Sagástegui A. 3976 (US). **Lambayeque:** Prov. Lambayeque, betw. Chochope & La Ramada, J. T. Columbus, J. M. Porter & E. H. Roalson 3444 (RSA, US); El Remanzo, Olmos, 2 Nov. 1991, S. Llantos Q. s.n. (HAO). **Loreto:** Prov. Maynas, Playa Timicurillo, S. McDaniel & M. Rimachi 23073 (AMAZ); Vecindades de Iquitos, Mishuyacu, E. Anderson 848 (US). **Piura:** Prov. Talara, entre Sullana y Talara, A. Sagástegui A. 10927 (US). **Tumbes:** Prov. Tumbes, La Esperanza, near Tumbes, A. Sagástegui A. 3063 (US). **Ucayali:** Prov. Contamana, ca. a la carretera del Oriente, S. McDaniel 14049 (AMAZ).

7. **Eragrostis curvula** (Schrad.) Nees, Fl. Afr. Austral. Ill. 397. 1841. TYPE: South Africa. Cape Province: Cape of Good Hope, Hesse s.n. (holotype, LE!; isotype, LE-TRIN 2327.01 [lower middle specimen!]). Figures 6Q–T; 12A–C.

Perennial, caespitose, forming innovations at the base; culms (45–)60–150 cm tall, erect, glabrous or glandular. Leaf sheaths 1/3–2/3 the length of the internodes, with scattered hairs, hairs to 9 mm; ligules 0.6–1.3 mm, ciliate; blades 12–50(–65) × 0.1–0.3 cm, flat to involute, abaxial surfaces glabrous, sometimes scaberulous, adaxial surfaces with scattered hairs basally, hairs to 7 mm. Panicles 16–35 (–40) × (4–)8–24 cm, ovate to oblong, open; primary branches 3–14 cm, diverging 10°–80° from the rachises; pulvini glabrous or not, the hairs up to 3 mm; pedicels 0.5–5 mm, appressed, flexible. Spikelets 4–8.2(–10) × 1.2–2 mm, 3- to 10-flowered, linear-lanceolate, plumbeous to yellowish; disarticulation irregular to acropetal, proximal rachilla segments persistent; glumes 1.2–3 mm, subequal, lanceolate, hyaline; lower glume 1.2–2.6 mm; upper glumes 2–3 mm; lemmas 2–3.2 mm, ovate, membranous, lateral veins conspicuous; apex acute; paleae 2–3.2 mm, hyaline to membranous; apex obtuse; sta-

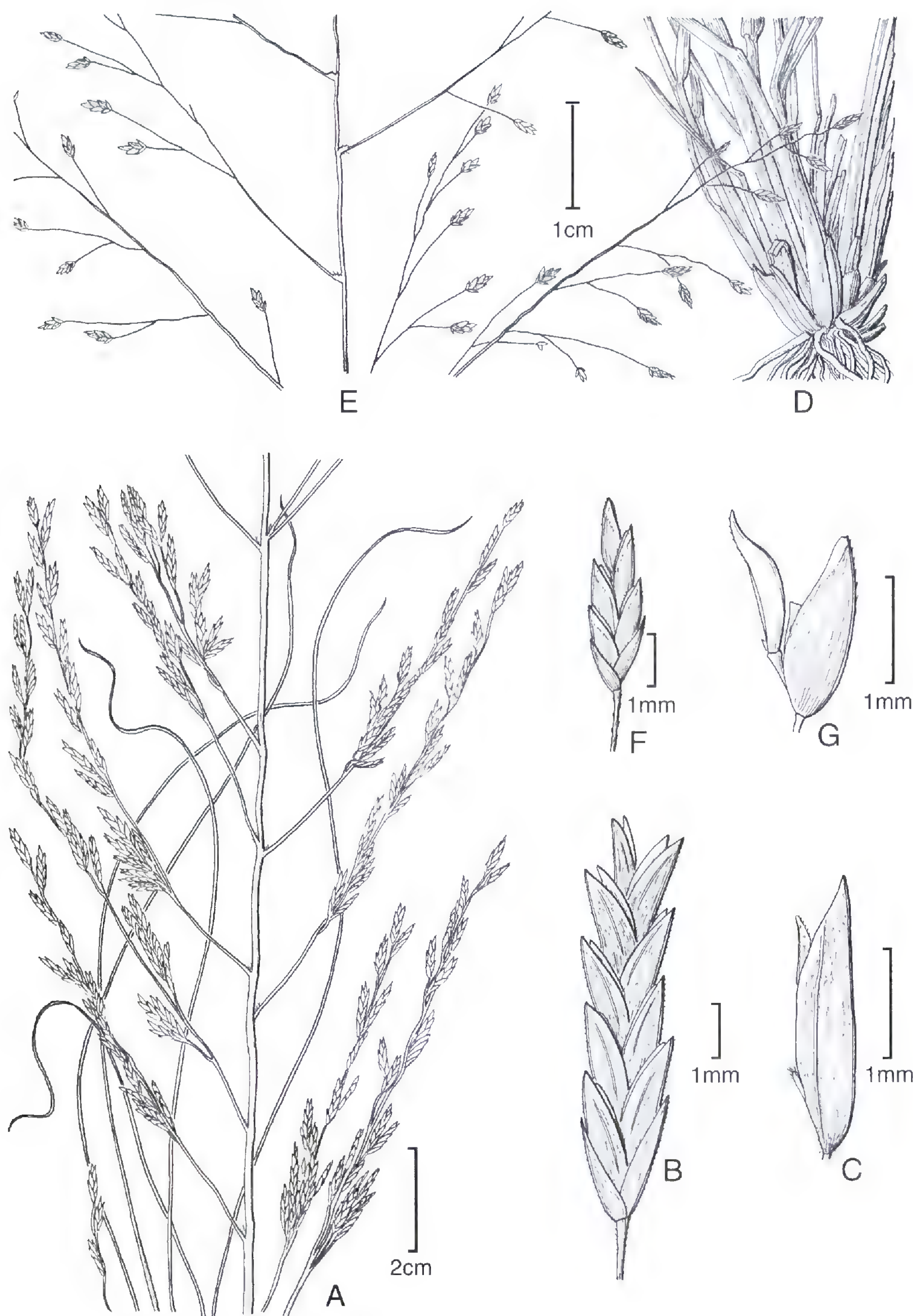


Figure 12. *Eragrostis curvula*. —A. Panicle. —B. Spikelet. —C. Floret. *Eragrostis lugens*. —D. Culm base. —E. Panicle. —F. Spikelet. —G. Rachilla showing palea (left) and lemma (right).

mens 3, anthers 0.8–1.3 mm, reddish brown. Caryopses 1–1.7 mm, ellipsoid to obovoid, strongly dorsally flattened, ventral surface with a shallow, broad groove or ungrooved, smooth to striate, mostly translucent, elliptical in cross section, light brown, bases often greenish. $2n = 40, 50, 60, 80$ (de Wet, 1954; Spies & Jonker, 1987).

Distribution and habitat. Native to southern Africa; introduced in the U.S.A., Mexico, Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Peru, Uruguay, and Venezuela (Nicora, 1998; Peterson & Boechat, 2001); rocky slopes, margins of woods, roadsides, waste ground, and often used in reclamation; 10–2900 m.

Phenology. Flowering in June.

Specimens examined. PERU. **Cajamarca:** Prov. Cajamarca, entre Cajamarca y Cumbe Mayo, W of Cajamarca, *I. Sánchez Vega* 4125 (CPUN).

8. *Eragrostis hypnoides* (Lam.) Britton, Sterns & Poggenb., Prelim. Cat. 69. 1888. Basionym: *Poa hypnoides* Lam., Tabl. Encycl. 1: 185. 1791. *Megastachya hypnoides* (Lam.) P. Beauv., Ess. Agrostogr. 74, 167, 175. 1812. *Neeragrostis hypnoides* (Lam.) Bush, Trans. Acad. Sci. St. Louis 13: 180. 1903. *Erosion hypnoides* (Lam.) Lunell, Amer. Midl. Naturalist 4: 221. 1915. TYPE: Tropical America, *D. Richard* s.n. (holotype, P-LA!; isotypes, BAA 1041!, NY [fragm.] ex P, US 2850742 [fragm.] ex P!). Figures 2I–L; 7C–E.

Annuals, stoloniferous, mat-forming, without innovations; culms decumbent and rooting at the lower nodes, erect portion (2–)5–12(–20) cm tall, often branched, glabrous or hairy on the lower internodes. Leaf sheaths 1/3–1/2 as long as the internodes above, pilose on the margins, collars, and at the apices, hairs 0.1–0.6 mm; ligules 0.3–0.6 mm, ciliate; blades 0.5–2.5 × 0.1–0.2 cm, flat to involute, abaxial surfaces glabrous, adaxial surfaces appressed pubescent, hairs ca. 0.2 mm. Panicles 1–3.5 × 0.7–2.5 cm, terminal and axillary, ovate, open to somewhat congested; primary branches 0.1–0.5 cm, appressed to strongly divergent, glabrous; pulvini sparsely pilose or glabrous; pedicels 0.2–1 mm, ciliate. Spikelets 4–13 × 1–1.5 mm, 12- to 35-flowered, linear-oblong, often arcuate, loosely imbricate, greenish yellow to purplish; disarticulation acropetal, paleae persistent; glumes 0.4–1.2 mm, subequal, linear-lanceolate to lanceolate, hyaline; lower glume 0.4–0.7 mm; upper glume 0.8–1.2 mm; lemmas 1.4–2 mm, ovate, strongly 3-veined, veins greenish; apex acuminate; paleae 0.7–1.2 mm, hyaline, keels scaberulous; apex acute to obtuse; stamens 2, anthers 0.2–0.3 mm, brownish. Caryopses 0.3–0.5 mm, ellipsoid, faintly striate and reticulate, laterally flattened, somewhat translucent, elliptical in cross section, light brown. $2n = 20$ (Davidse & Pohl, 1972).

Distribution and habitat. Native to the Americas and found in North, Central, and South America (excluding Chile and Colombia) and the Caribbean (Nicora, 1998; Peterson & Boechat, 2001); found along muddy or sandy shores of lakes and rivers and moist disturbed sites; 0–500 m.

Phenology. Flowering August through February.

Specimens examined. PERU. **Cajamarca:** Prov. San Ignacio, al N de San Ignacio, *I. Sánchez Vega* 3965 (CPUN). **Loreto:** Prov. Maynas, Santa María near Yur-

imaguas, *R. Ferreyra* 5023 (US, USM); Iquitos, *F. Ayala* 00676 (AMAZ). **Tumbes:** Prov. Tumbes, margen del Río Tumbes, *A. López M. & A. Sagástegui A.* 4023 (US). **Ucayali:** Prov. Coronel Portillo, *A. Sagástegui A. & A. Aldave* 5720 (US).

9. *Eragrostis japonica* (Thunb.) Trin., Mém. Acad. Imp. Sci. St.-Pétersbourg, Sér. 6, Sci. Math. 1(4): 405. 1830. Basionym: *Poa japonica* Thunb., Fl. Jap. 51. 1784. *Eragrostis tenella* var. *japonica* (Thunb.) Roem. & Schult., Syst. Veg. 2: 576. 1817. *Diandrochloa japonica* (Thunb.) A. N. Henry, Bull. Bot. Surv. India 9: 290. 1968. *Roshevitzia japonica* (Thunb.) Tzvelev, Novosti Sist. Vysš. Rast. 7: 50. 1970[1971]. TYPE: Japan, *Herb. Thunberg* 2252 (holotype, UPS not seen, microfiche IDC 1036!, K photo!; isotype, BRI fragm. not seen). Figures 2M–P; 9C–E.

Poa glomerata Walter, Fl. Carol. 80. 1788. *Eragrostis glomerata* (Walter) L. H. Dewey, Contr. U.S. Natl. Herb. 2(3): 543. 1894. *Megastachya glomerata* (Walter) Schult., Mant. 2: 327. 1824. *Diandrochloa glomerata* (Walter) Burkart, Bol. Soc. Argent. Bot. 12: 287. 1968. TYPE: U.S.A. South Carolina: *Walter* s.n. (holotype, BM!).

Annual, caespitose; culms 25–100(–115) cm tall, erect, sometimes geniculate below, branching from the lower and middle nodes, glabrous and somewhat shiny below the nodes. Leaf sheaths 3/4–7/8 as long as the internodes above, glabrous at the summit and along the upper margins; ligules 0.4–0.6 mm, a delicate membrane, glabrous; blades (4–)15–20(–25) × 0.15–0.6 cm, flat, glabrous below and scaberulous above, sometimes auriculate near the base. Panicles 15–40 × 0.8–5 cm, lanceoloid, contracted, interrupted below, the ascending, often appressed primary branches 2–10 cm, spreading up to 30° from the rachises, the branches scaberulous and shiny, floriferous near base; pulvini glabrous; pedicels 0.5–1.5 mm, erect and sinuous. Spikelets 2.2–3.8 × 0.8–1.3 mm, 4- to 12-flowered, oblong to narrowly lanceolate, yellowish brown to whitish and hyaline; disarticulation basipetal, rachillas and glumes persistent; glumes 0.6–1 mm, subequal, ovate to ovate-lanceolate, hyaline, faintly keeled, scaberulous along the keel; upper glume without a midnerve; lemmas 0.9–1.2 mm, ovate, hyaline, lateral nerves conspicuous below, greenish, keeled, glabrous along the keel; apex acute; paleae 0.6–0.8 mm, hyaline, scaberulous along the keel near the apex; apex acute, often bifid; stamens 2, anthers 0.1–0.2 mm, whitish to light brown. Caryopses 0.3–0.4 mm, obovoid, smooth or minutely irregularly striate, slightly dorsally flattened, pericarp often loose, elliptical in cross section, reddish brown. $2n = 20, 60$ (Pohl & Davidse, 1971).

reported for *E. glomerata*; Christopher & Abraham, 1974).

Distribution and habitat. Native in tropical regions of Asia; introduced in U.S.A., Mexico, Central America, Caribbean, Argentina, Bolivia, Brazil, Ecuador, Guyana, Paraguay, Peru, Uruguay, and Venezuela (Nicora, 1998; Peterson & Boechat, 2001); occurs in moist areas along rivers and streams, usually in sandy soils; 0–400 m.

Phenology. Flowering January through November.

Specimens examined. PERU. **Cajamarca:** Prov. Jaén, 1 km N of Chamayo on Hwy. 5N toward Jaén, *P. M. Peterson & N. F. Refulio-Rodriguez* 15053 (US, USM). **Huánuco:** Prov. Pachitea, Bosque Nacional de Iparia, *J. Schunke V.* 2094 (US). **La Libertad:** Prov. Trujillo, Mócan, Hacienda Casagrande, *A. Sagástegui A.* 3977 (US). **Lambayeque:** Prov. Reque, Río Reque, *S. Llatas Q.* 193 (US). **Loreto:** Iquitos, *E. Asplund* 14802 (US). **Madre de Dios:** Parque Nacional del Manu, Cocha-Cashu, Río Manu, *R. Foster* 9769 (US). **Piura:** Hacienda Buenos Aires, campos de arroz, *E. Anderson* 569 (US).

- 10. *Eragrostis lugens*** Nees, Fl. Bras. Enum. Pl. 2: 505–506. 1829. *Eragrostis pilosa* var. *lugens* (Nees) Griseb., Abh. Königl. Ges. Wiss. Göttingen 24: 290. 1879. TYPE: Brazil. Meridionalis, *F. Sellow s.n.* (lectotype, designated by Davidse, Fl. Mesoamericana 6: 271. 1994, US 732957!; isotypes, B not seen, BAA 2932!). Figures 11–L; 12D–G.

Perennial, caespitose, forming innovations at base; culms 30–70 cm tall, erect, sometimes geniculate below, glabrous and somewhat shiny below the nodes. Leaf sheaths 1/2–2/3 as long as the internodes above, ciliate at the summit and along the upper margins; ligules 0.2–0.3 mm, ciliate; blades (5–)8–22 × 0.1–0.2(–0.22) cm, involute, rarely flat, mostly glabrous above and below, scaberulous toward the apex and along margins, sometimes with scattered hairs along the margins, the hairs up to 7 mm. Panicles 16–28 × 10–21 cm, open, ovate, the ascending primary branches 0.6–15 cm, spreading up to 100° from the rachises, the branches scaberulous, not floriferous near base; secondary branches composed of loosely overlapping spikelets; pulvini ciliate, the hairs up to 7 mm long; pedicels 1.4–5(–7) mm, erect, wiry, spreading. Spikelets 2–4.5(–5) × 0.5–1.1 mm, 2- to 7-flowered, narrow lanceolate, light plumbeous to reddish purple; disarticulation acropetal, paleae and rachilla persistent; glumes 0.6–1.4 mm, subequal, broadly ovate to narrowly lanceolate, hyaline, keeled, scaberulous along the keel, sometimes reddish purple; lower glume 0.6–1 mm; upper glume 1.1–1.4 mm, usually broader than the lower; lemmas 1.2–1.8 mm, broadly ovate, membranous, distal margins

hyaline, lateral nerves obscure to barely evident, keeled, scaberulous along the keel near apex; apex acute; paleae 1.1–1.7 mm, membranous to partially hyaline, scaberulous along keels; apex obtuse; stamens 3, anthers 0.2–0.7 mm, reddish purple. Caryopses 0.5–0.6 mm, obovoid to somewhat prism-shaped, terete to somewhat laterally flattened, with a weak ventral groove, striate and reticulate, usually opaque, irregularly obovate to triangular in cross section, faintly reddish brown to whitish. $2n = 40, 80$ (Gould, 1958).

Distribution and habitat. Native to the Americas with a broad distribution from U.S.A., Mexico, Central America, Argentina, Bolivia, Brazil, Colombia, Ecuador, Peru, Uruguay, and Venezuela (Nicora, 1998; Peterson & Boechat, 2001); sandy dunes, river banks, near cultivated fields, and open slopes; 0–2200 m.

Phenology. Flowering in October.

Comments. The specimen *F. Sellow s.n.* was selected as lectotype by Davidse (1994), and his lectotypification was accepted by Boechat and Longi-Wagner (2001).

Specimens examined. PERU. **Apurímac:** Prov. Abancay, Tablachaca, *C. Vargas C.* 015695 (CUZ).

- 11. *Eragrostis lurida*** J. Presl, Reliq. Haenk. 1(4–5): 276. 1830. *Poa lurida* (J. Presl) Kunth, Enum. Pl. 1: 342. 1833. TYPE: Peru. *T. Haenke s.n.* (holotype, PR not seen; isotypes, MO 2111146!, PR not seen, US 2941523 [fragm.] ex PR!).

Perennial, caespitose, with innovations at base; culms (5–)15–75 cm tall, erect, sometimes slightly geniculate below, glabrous or occasionally with a tuft of hairs below the nodes, the hairs less than 1 mm, sometimes with an occasional elliptical orange gland. Leaf sheaths 3/4 to about as long as the internodes above, densely white ciliate at the summit and along the margins, sometimes with scattered hairs on the abaxial surface; ligules 0.5–0.9 mm, ciliate; blades 1.5–16.5 × 0.15–0.35(–0.5) cm, flat to involute, glabrous and sometimes shiny below and scaberulous above. Panicles 3–35 × 0.5–5(–7) cm, narrowly ovate to spicate, contracted and condensed into tightly glomerate lobes, interrupted near base, spicate to narrowly ovate, rachis glabrous, the ascending primary branches 0.6–5 cm, densely flowered, appressed or spreading 20°–80° from the rachises, floriferous near base; secondary branches condensed into tightly glomerate lobes of spikelets; pulvini ciliate or glabrous; pedicels 0.1–1 mm, ascending and appressed, wiry, scabrous. Spikelets 2.5–6 × 1–2.1 mm, 3- to 10-flowered, narrowly lanceolate to ovate, inflated to slightly compressed, dark to light

plumbeous, sometimes purple-tinged, rachilla often ciliate; disarticulation acropetal with glumes first, then lemmas falling individually, paleae persistent on rachilla; glumes 1–2 mm, subequal, broadly ovate to lanceolate, membranous, margins hyaline, keeled, scaberulous along keel, sometimes 3-nerved; lower glume 1–1.5 mm; upper glume 1.2–2 mm; lemmas 1.6–2.4 mm, broadly ovate, membranous, lateral nerves conspicuous, evident, keeled; apex acute, scaberulous, the minute prickly hairs appearing as whitish dots under 10–20×; paleae 1.5–2.3 mm, membranous to partially hyaline, scaberulous along the keels; apex truncate to obtuse; stamens 3, anthers 0.4–0.6 mm, reddish purple. Caryopses 0.6–0.8 mm, obovoid to ellipsoid, striate and reticulate, sometimes with a weak ventral groove, rectangular with the lateral sides angled in cross section, light reddish brown.

Distribution and habitat. Native to the central Andes from Bolivia, Colombia, Ecuador, and Peru (Nicora, 1998; Laegaard & Peterson, 2001); dry rocky hillsides, slopes, sandy roadsides, and rocky alluvial fans; 2000–3800 m.

Phenology. Flowering December (one collected in September) through July.

KEY TO THE SUBSPECIES OF *ERAGROSTIS LURIDA*

- 11a. Primary branches spreading; panicles 2–5(–7) cm wide, narrowly ovate *E. lurida* subsp. *lurida*
- 11b. Primary branches appressed and overlapping on the rachis; panicles 0.5–2 cm wide, spicate
..... *E. lurida* subsp. *contracta*

11a. *Eragrostis lurida* J. Presl subsp. *lurida*.
Figures 1A–D; 13A–Q.

Eragrostis contristata Nees & Meyen, Gramineae 31–32. 1841. TYPE: Peru, Laguna de Titicaca, Apr. 1831, *Meyen s.n.* (holotype, B not seen; isotypes, BAA-1021 [fragm.] ex B!, LE-TRIN 2326.01!, P!, US 2891461 [fragm.]).

Eragrostis bahiensis var. *boliviensis* Henrard, Meded. Rijks-Herb. 40: 68. 1921. TYPE: Bolivia, La Paz: Larecaja, Sorata, 2900 m, Feb. 1858, *G. Mandon* 1332 (holotype, L 908,88-303 not seen; isotypes, K!, L 908,88-342 not seen, P!, US 3161127!, US 256470!, US 911775 [fragm.] ex L!).

Panicles 2–5(–7) cm, narrowly ovate, primary branches spreading 20°–80° from the rachises.

Specimens examined. PERU. **Ancash:** Prov. Bolognesi, 8 km E of Raquia & 2 km W of Cajacay on Ruta 02-104, *P. M. Peterson, N. F. Refulio-Rodriguez, A. Cano, M. LaTorre & I. Salinas* 17881 (US, USM); Prov. Huari, 21 km S of Huari on rd. toward San Marcos at Río Mosna crossing, *P. M. Peterson & N. F. Refulio-Rodriguez* 13856 (US, USM). **Apurímac:** Prov. Abancay, Tablachaca, *C. Vargas C.* 015701 (CUZ, USM); Prov. Andahuaylas, near Huancarama, *C. Vargas C.* 008836 (CUZ). **Ayacucho:** Prov. Huamanga,

Cerro Acuchimay near Ayacucho, *O. Tovar* 2447 (USM). **Cajamarca:** Prov. Cajabamba, 6 km S of Cajabamba on rd. toward Huamachuco, *P. M. Peterson & N. F. Refulio-Rodriguez* 13993 (US, USM); Prov. Cajamarca, just N of Colina, *P. Gutte & G. Muller* 9093 (USM); 1 km S of Huambocancha on rd. toward Cajamarca, *P. M. Peterson & N. F. Refulio-Rodriguez* 14845, 14847 (US, USM); 4 km N of San Juan on rd. to Cajamarca, *J. T. Columbus, J. M. Porter & E. H. Roalson* 3511 (RSA, US); Prov. Cutervo, 13 km W of Cutervo on rd. toward Súcoto, *P. M. Peterson & N. F. Refulio-Rodriguez* 15005 (US, USM). **Cusco:** Prov. Anta, near Chacán, *C. Vargas C.* 017116 (CUZ); Prov. Cusco, Mishahuara, *C. Vargas C.* 21997 (CUZ); Prov. Urubamba, Yahuarmaqui, *C. Vargas* 9281 (US); Muych, *C. Vargas C.* 014115 (CUZ). **Huancavelica:** Prov. Huancavelica, Izenchaca, *O. Tovar* 2447 (USM); Prov. Tayacaja, Hacienda Pilcos, below Coleabamba, *O. Tovar* 1899 (US). **Huánuco:** Prov. Huánuco, near Huánuco, *O. Velarde* 2546 (US). **Junín:** Prov. Huancayo, Huancayo en el Cerro La Libertad, *O. Velarde* 2636 (US); Prov. Tarma, 1 km up rd. to Hacienda Maraynioc out of Palca, *P. M. Peterson & O. Tovar* 14050 (US, USM). **Lima:** Prov. Lima, Dist. Lurín, *M. LaTorre* 110 (USM).

11b. *Eragrostis lurida* subsp. *contracta* (Pilg.) P. M. Peterson & Sánchez Vega, stat. et comb. nov. Basionym: *Eragrostis contracta* Pilg., Bot. Jahrb. Syst. 37: 376. 1906. TYPE: Peru, Hacienda Cajabamba inter Samanco et Caraz, in formatione aperta, 3700 m, *A. Weberbauer* 3035 (lectotype, designated here, US 2767408 [fragm.] ex B!). Figure 8D, E.

Panicles 0.5–2 cm, spicate, primary branches appressed and overlapping on the rachis.

Comments. The specimen *A. Weberbauer* 3035 at US is chosen as lectotype because it is a fragment of a specimen from the original collection from B, which was destroyed during World War II.

Specimens examined. ECUADOR. **Chimborazo:** Alausi, 1. S. *Hitchcock* 20713 (US). **Cotopaxi:** 20 km N of Ambato & 21.5 km S of Latacunga, just off the Pan-American Hwy., *P. M. Peterson, C. R. Annable & M. Poston* 8787 (US). **Pichincha:** Malchingui, *M. Acosta-Solis* 16342 (US). **Tungurahua:** Ambato, *A. S. Hitchcock* 21728 (US). PERU. Prope Ocos, in formatione aperta, *A. Weberbauer* 2663 (syntype, US 1061508 [fragm.] ex B). **Ancash:** Prov. Bolognesi, 8 km E of Raquia & 2 km W of Cajacay on Ruta 02-104, *P. M. Peterson, N. F. Refulio-Rodriguez, A. Cano, M. LaTorre & I. Salinas* 17876A (US); Prov. Cajatambo, ad Chiquian, in formatione aperta, plantas herbaceas (maxime Gramineas) intermixtis fruticibus gerente, *A. Weberbauer* 2841 (syntype, B not seen, BAA 1020 [fragm.] ex B). Prov. Recuay, Cordillera Blanca, 20 km E of Raquia on rd. toward Huaraz, *P. M. Peterson & N. Refulio R.* 13794 (US, USM). **Arequipa:** Prov. Caylloma, 5 km W of Chivay on rd. toward Yanque, *P. M. Peterson & N. F. Refulio-Rodriguez* 18296 (US, USM); Prov. Lucanas, 1 km S of Lucanas on rd. toward Puquio, *P. M. Peterson & N. F. Refulio Rodriguez* 18200 (US, USM); Prov. Huanca Sancos, 27 km NW of Putajasa & 3 km S of Saesamarca, *P. M. Peterson, A. Cano, M. LaTorre, A. Ramirez & D. Susanibar* 16284 (US, USM). **Cajamarca:**

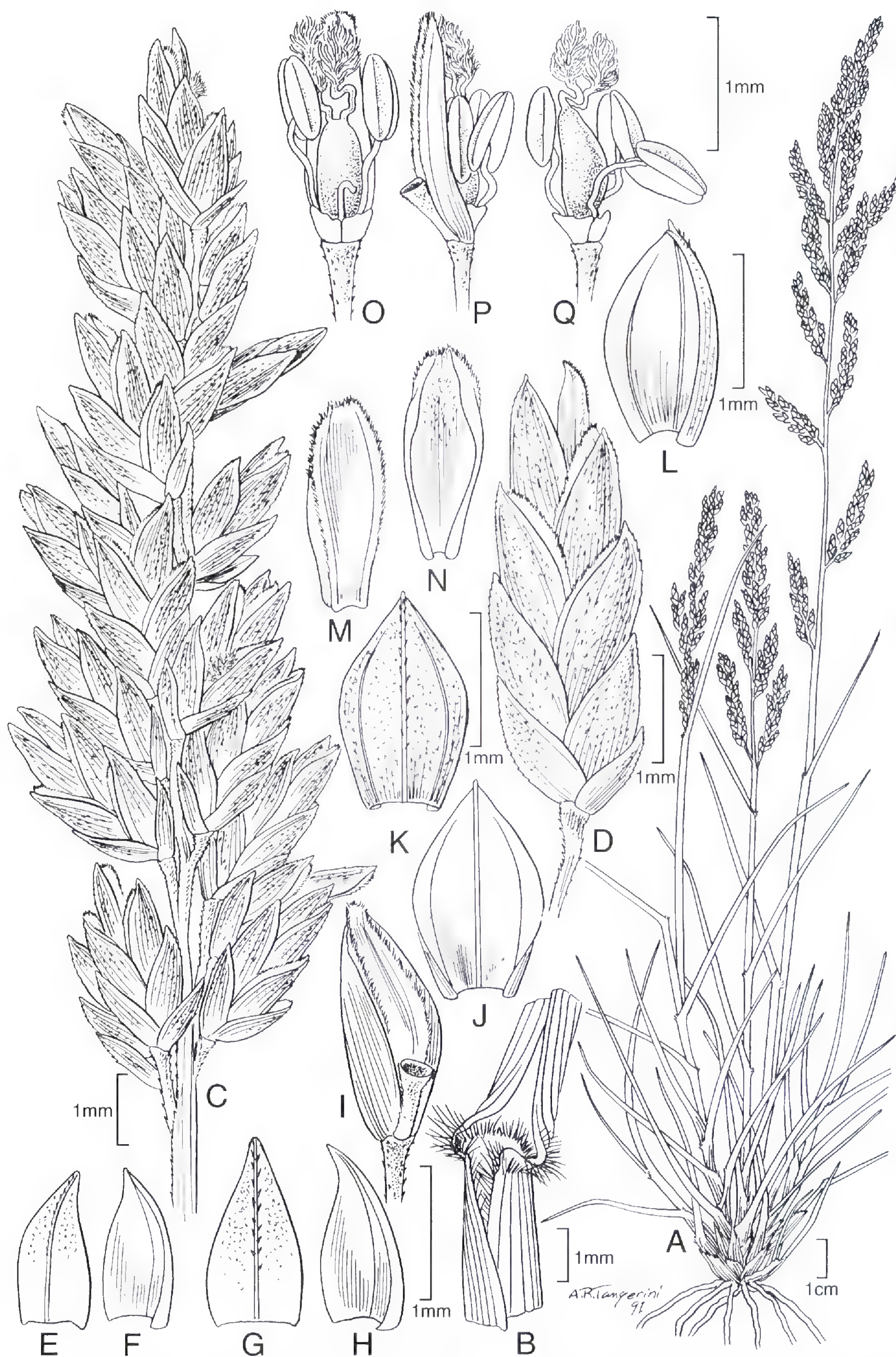


Figure 13. *Eragrostis lurida* subsp. *lurida* (P. M. Peterson, E. J. Judziewicz & R. M. King 9103; P. M. Peterson & E. J. Judziewicz 9327). —A. Habit. —B. Ligule. —C. Panicle branch. —D. Spikelet. —E. Lower glume (dorsal view). —F. Lower glume (ventral view). —G. Upper glume (dorsal view). —H. Upper glume (ventral view). —I. Rachilla with floret. —J. Lemma (ventral view). —K. Lemma (dorsal view). —L. Lemma (side view). —M. Palea (dorsal view). —N. Palea (ventral view). —O. Palea enclosing the stamens, pistil, and lodicules. —P. Palea enclosing the stamens, pistil, and lodicules with rachilla (side view). —Q. Stamens, pistil, and lodicules.



Figure 14. *Eragrostis magna* (P. M. Peterson & N. F. Refulio-Rodriguez 16515; J. F. Macbride 4069). —A. Habit. —B. Panicle. —C. Spikelet. —D. Floret.

Prov. Contumazá, Las Altamisas (Guzmango), *A. Sagástegui A. et al.* 10382 (US). **Cusco:** Oyantaytambo, *A. S. Hitchcock* 22486 (US). **Huancavelica:** Prov. Huancavelica, *O. Tovar* 960 (US). **Junín:** Prov. Huancayo, Huancayo, *J. Soukup* 1906 (US). **Lima:** Huarochirí, Tamboraque, *O. Velarde N.* 5010 (US); Yauyos, Cruz Pampa, encima de Tupe, *E. Cerrate & O. Tovar* 1109 (US). **Tacna:** Prov. Tarata, Tarata, *C. Vargas* 9235 (US).

- 12. *Eragrostis magna*** Hitchc., Contr. U.S. Natl. Herb. 24(8): 341. 1927. TYPE: Peru. Huánuco: Huacachi Estacion near Muna, 2000 m, 20 May–1 June 1923, *J. F. MacBride* 4069 (holotype, F 535136 not seen; isotype, US 1256382!). Figures 5E–H; 14A–D.

Perennial, caespitose with innovations and short rhizomes near base; culms 80–150 cm tall, erect or ascending, robust, glabrous and somewhat shiny below the nodes, 3 or 4 nodes per culm, 4–8 mm in diam. at base. Leaf sheaths 2/3–3/4 the length of the internodes above, mostly glabrous or sparsely short-bearded at the summit; ligules ca. 0.25 mm, ciliate; blades (26–)40–60 × (0.3–)0.4–0.7 cm, flat below and in the middle, involute toward the apex, glabrous and pilose on the lower margins above. Panicles (22–)30–50 × 6–16 cm, narrowly ovate, somewhat condensed and densely flowered; primary branches 12–24 cm, semi-verticillate, ascending, not floriferous near base, branches diverging 0°–90° from the rachises; pulvini pilose, the hairs up to 3 mm; pedicels mostly 1–6 mm, erect, sinuous. Spikelets 5–8(–10) × 2–2.4 mm, (5 to)7- to 10-flowered, narrowly oblong to ovate-lanceolate, brownish olivaceous to plumbeous; disarticulation with the lemma first then the palea, rachilla mostly terete, persistent with a short crown of hairs at the apex, the hairs less than 0.2 mm; glumes 2–2.4 mm, subequal, hyaline, 1(3)-nerved, keeled, apex acute to acuminate; lower glume 2–2.2 mm, narrower than the upper; upper glume 2.1–2.4 mm; lemmas 2.4–2.9 mm, ovate to lanceolate, glabrous, membranous and hyaline on margins, margins involute on lower half, keeled toward apex, lateral nerves evident; apex acute to obtuse; paleae 2.4–2.9 mm, about as long as the lemma, hyaline, scaberulous along the keels; apex truncate; stamens 3, anthers 1.2–1.5 mm. Caryopses ca. 1.2–1.8 mm, rectangular-prismatic, strongly laterally flattened, striate and reticulate, with a deep ventral groove, narrowly triangular in cross section, reddish brown.

Distribution and habitat. Endemic to the central Peruvian Andes and known only from a few collections; occurs on steep, rocky, often calcareous slopes in grasslands; 1900–2670 m.

Phenology. Flowering March through June.

Specimens examined. PERU. **Apurímac:** Prov. Aymaraes, 16 km NW of Chalhuanca, *P. M. Peterson & N. F. Refulio-Rodriguez* 16515 (US, USM). **Cajamarca:** Prov. Chota, Distrito Cochabamba, 4 km sobre la carretera Cochabamba–Cutervo, *I. Sánchez Vega* 2292 (CPUN, US). **Huánuco:** Prov. Huánuco, Hacachi, near Muña, *J. F. Macbride* 4069 (F, US).

- 13. *Eragrostis maypurensis*** (Kunth) Steud., Syn. Pl. Glumac. 1: 276. 1854. Basionym: *Poa maypurensis* Kunth, Nov. Gen. Sp. 1: 161, 162. 1815 [1816]. *Megastachya maypurensis* (Kunth) Roem. & Schult., Syst. Veg. 2: 588. 1817. TYPE: Venezuela. Amazonas: Río Orinoco, Apr., *Humboldt & Bonpland s.n.* (holotype, P!; isotypes, BAA 1053 [fragm.]!, P!, US 2850758 [fragm.] ex P-Bonpl.!, [fragm.] ex B-W!). Figures 3I–L; 15A–C.

Annual, caespitose; culms 25–45 cm tall, erect to ascending, often decumbent, many branched from the base forming a rosette, mostly with 2 to 3(to 6) nodes. Leaf sheaths 1/2–2/3 as long as the internodes above, mostly glabrous, pilose at the summit and along upper margins; ligules ca. 0.5 mm, ciliate; blades 6–12 × 0.2–0.4 cm, flat to loosely involute toward the apex, scattered pilose near base and along margins to pilose abaxially and adaxially, the hairs 1.5–5 mm, papillose-based. Panicles 6–14 × (1.5–)3–7.5 cm, open, narrowly ovate to oblong, ± densely flowered, primary branches 1.5–5 cm, spreading, solitary at a node, floriferous to base, branches diverging 0°–70° from the rachises; pulvini pilose, the hairs up to 4 mm long; pedicels 0–1.5 mm, shorter than the spikelets, appressed, with a few scattered hairs. Spikelets 8–15(–30) × 1.8–2.5(–3) mm, 12- to 35-flowered, narrowly lanceolate to oval-lanceolate, florets imbricate, reddish purple to yellowish; disarticulation acropetal with the paleae and glumes persistent; glumes (1.5–)2–2.6 mm, subequal, lanceolate-acuminate, strongly to weakly keeled, scaberulous along the keel; lower glumes 2–2.6 mm, usually longer than the upper; upper glumes (1.5–)2–2.6 mm; lemmas 1.8–3 mm, ovate-acuminate, chartaceous, lateral nerves and midnerve evident, usually green; paleae 1.5–2.2 mm, shorter than the lemma, hyaline; stamens 2, anthers 0.2–0.3 mm, purplish. Caryopses 0.4–0.7 mm, ovoid, translucent, rhomboid reticulate without striations, obovate to circular in cross section, reddish brown. $2n = 20$ (Pohl & Davidse, 1971).

Distribution and habitat. Native to the Americas from Mexico, Central America to South America in Bolivia, Brazil, Colombia, Peru, and Venezuela (Nicora, 1998; Laegaard & Peterson, 2001); a fairly



Figure 15. *Eragrostis maypurensis* (J. R. Swallen 3306). —A. Habit. —B. Spikelet. —C. Floret. *Eragrostis pilgeri* subsp. *pilgeri* (P. M. Peterson & N. F. Refulio-Rodriguez 13919). —D. Spikelet. —E. Floret. —F. Lemma (dorsal view). —G. Palea enclosing the stamens, pistil, and lodicules.

common grass in the Amazonian region where it is found growing in savannahs, sandy sites, along roadsides, and disturbed areas; 100–1000 m.

Phenology. Flowering September through May.

Specimens examined. PERU. **Madre de Dios:** Prov. Tambopata, Puerto Maldonado, entre Aeropuerto Viejo y Puerto Maldonado, *P. J. Babour* 5396 (AMAZ). **San Martín:** Alto Río Huallaga, *L. Williams* 5791 (US); Dist. San Martín, along Río Shilcayo, 1–4 km NE of Tarapoto, *C. M. Belshaw* 3359 (F, MICH, MO, UC, US, WIS).

14. *Eragrostis mexicana* (Hornem.) Link, Hort. Berol. 1: 190. 1827. Basionym: *Poa mexicana* Hornem., Hort. Bot. Hafn. 2: 953. 1815. TYPE: Mexico. Cultivated from seed collected in Mexico, *Sessé s.n.* (lectotype, designated here, MA!).

Caespitose annuals; culms 10–130 cm tall, erect, sometimes geniculate, glabrous, sometimes with a ring of glandular depressions below the nodes. Leaf sheaths 1/2–2/3 as long as the internodes, sometimes with glandular pits, pilose near the apices and on the collars, hairs to 4 mm, papillose-based; ligules 0.2–0.5 mm, ciliate; blades 5–25 × 0.2–0.7(–0.9) cm, flat, abaxial surfaces glabrous, adaxial surfaces scabridulous, occasionally pubescent near the base. Panicles (5–)10–40 × (2–)4–18 cm, less than 1/2 the height of the plant, ovate, rachises angled and channeled; primary branches 3–12(–15) cm, solitary to whorled, appressed or diverging to 80° from the rachises; secondary branches somewhat appressed; pulvini glabrous; pedicels 1–6(–7) mm, almost appressed to narrowly divergent, stiff. Spikelets (4–)5–10(–11) × 0.7–2.4 mm, 5- to 11(to 15)-flowered, linear to linear-lanceolate or ovate to oblong, gray-green to purplish; disarticulation acropetal; glumes 0.7–2.3 mm, subequal, ovate to lanceolate, membranous; lemmas 1.2–2.4 mm, ovate, membranous, glabrous or with a few hairs, gray-green, lateral veins evident, often greenish; apex acute; paleae 1–2.2 mm, hyaline, keels scarious; apex obtuse to truncate; stamens 3; anthers 0.2–0.5 mm, purplish. Caryopses 0.5–0.8(–1) mm, ovoid to rectangular-prismatic, laterally flattened, shallowly to deeply grooved on the ventral surface, striate and reticulate, irregularly triangular in cross section, reddish brown, distal 2/3 opaque. $2n = 60$ (Pohl & Davidse, 1971).

Distribution and habitat. *Eragrostis mexicana* is native to the Americas and grows along roadsides, near cultivated fields, and in disturbed open areas, in lomas vegetation and slopes of the inter Andes of Peru; 60–3900 m. The species has been treated as two distinct subspecies by Koch and Sánchez-Vega (1985), both of which occur in Peru.

Phenology. Flowering September through June.

Comments. The specimen *Sessé s.n.* at MA is chosen as lectotype because it is located at the institution where the author worked and deposited types.

Specimens examined. BRAZIL. *Sessé & M. Lacasta s.n.* (syntype, US 2891498 [fragm.]).

KEY TO THE SUBSPECIES OF *ERAGROSTIS MEXICANA*

- 14a. Spikelets ovate to oblong in outline, 1.5–2.4 mm wide; lower glumes 1.2–2.3 mm long; sum of the spikelet width and lower glume length 2.7–4.7 mm; culms and sheaths sometimes with glandular depressions *E. mexicana* subsp. *mexicana*
- 14b. Spikelets linear to linear-lanceolate, 0.7–1.4 mm wide; lower glumes 0.7–1.7 mm long; sum of the spikelet width and lower glume length 1.5–3.1 mm; culms and sheaths without glandular depressions *E. mexicana* subsp. *virescens*

14a. *Eragrostis mexicana* (Hornem.) Link subsp. ***mexicana***. Figures 51–L; 16A–C.

Eragrostis limbata E. Fourn., Mexic. Pl. 2: 116. 1836. TYPE: Mexico. 1833, *A. J. A. Bonpland* 4573 (lectotype, designated by McVaugh, Fl. Novo-Galic. 14: 168. 1983, P!; isotype, US 2941517 [fragm.]).

Eragrostis neomexicana Vasey ex L. H. Dewey, Contr. U.S. Natl. Herb. 2(3): 542. 1894. TYPE: U.S.A. New Mexico: Organ Mountains, 1881, *G. Vasey* 474 (lectotype, designated by Koch & Sánchez Vega, Phytologia 58: 379. 1985, US 176631!; isotypes, K!, US 822049!, US 909912!).

Eragrostis alba J. Presl, Reliq. Haenk. 1(4–5): 279. 1830. *Poa alba* (J. Presl) Kunth, Enum. Pl. 1: 343. 1833. TYPE: Peru. *T. Haenke s.n.* (holotype, PR not seen; isotypes, MO 2111118!, US 2942409 [fragm.] ex P!).

Culms and sheaths sometimes with glandular depressions. Spikelets 1.5–2.4 mm, ovate to oblong; lower glumes 1.2–2.3 mm; sum of spikelet width and lower glume length 2.7–4.7 mm.

Comments. McVaugh did not indicate the herbarium when he designated *A. J. A. Bonpland* 4573 as lectotype (McVaugh, 1983), but Bonpland's collections are housed at P.

Specimens examined. PERU. **Ancash:** Prov. Bolognesi, 8 km E of Raquia & 2 km W of Cajacay on Ruta 02-104, *P. M. Peterson, N. F. Refulio-Rodriguez, A. Cano, M. LaTorre & I. Salinas* 17885 (US, USM); Prov. Huaraz, near Huaraz, *F. Castillo C. & Nuñez L. s.n.* (HUT). **Arequipa:** Tingo, *F. W. Pennell* 13109 (US). **Cajamarca:** Prov. Cutervo, Súcota, camino a San Andrés, *I. Sánchez-Vega* 2301 (CPUN). **Junín:** Prov. Chanchamayo, Río Rondayacu, 45 km from San Ramón, *D. N. Smith et al.* 2622 (US). **La Libertad:** Prov. Trujillo, Barraza, *A. Sagástegui A.* 7789 (US). **Lima:** Prov. Canta, 2 km SE of San Jose Canta, *P. M. Peterson & N. F. Refulio Rodriguez* 17987 (US, USM); Lurín, *J. F. Macbride* 5954 (US).

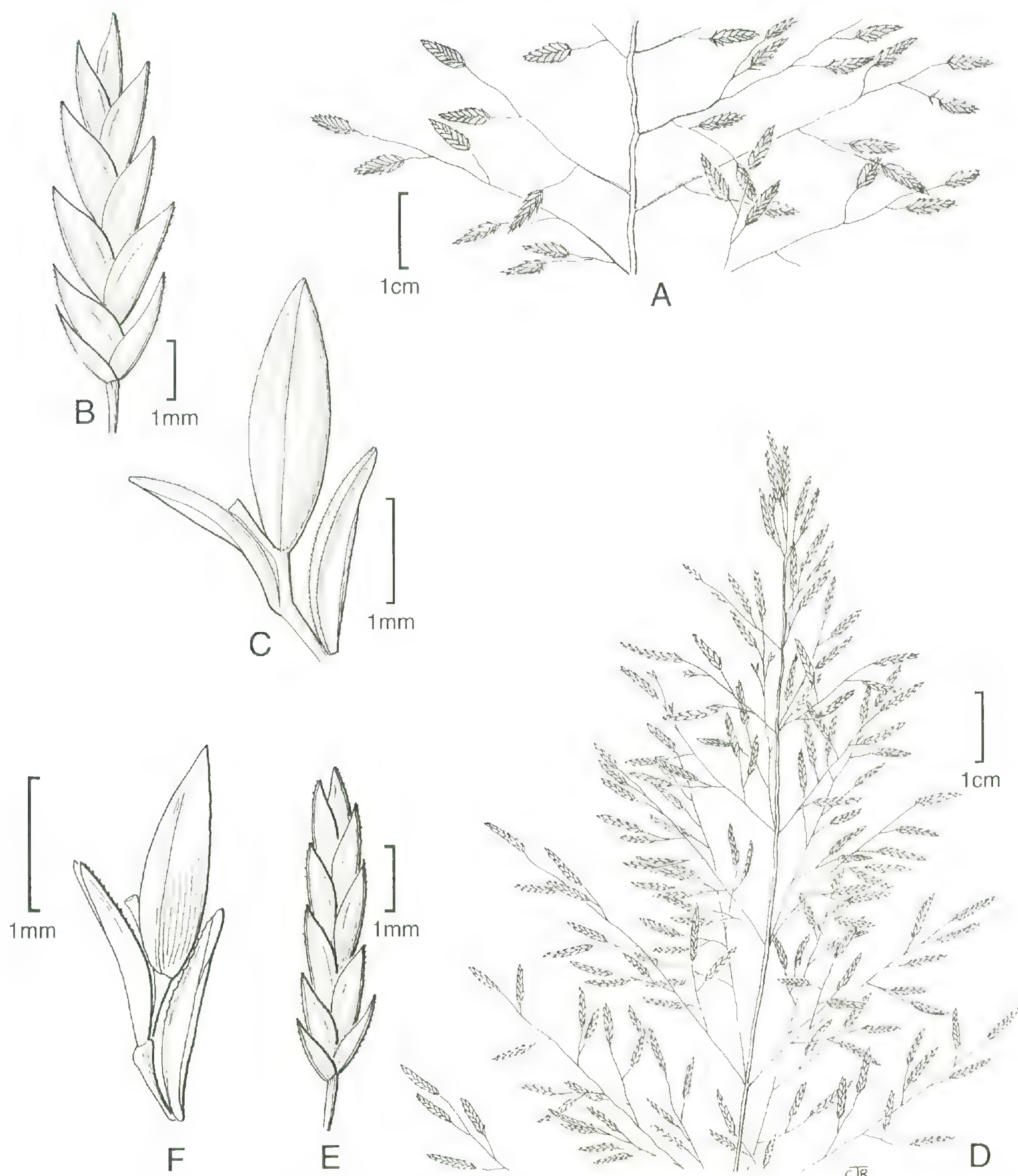


Figure 16. *Eragrostis mexicana* subsp. *mexicana*. —A. Panicle. —B. Spikelet. —C. Rachilla with paleae (right and left) and lemma (right). *Eragrostis mexicana* subsp. *virescens*. —D. Panicle. —E. Spikelet. —F. Rachilla with paleae (right and left) and lemma (right).

14b. *Eragrostis mexicana* subsp. *virescens* (J. Presl) S. D. Koch & Sánchez Vega, *Phytologia* 58(6): 380. 1985. Basionym: *Eragrostis virescens* J. Presl, *Reliq. Haenk.* 1(4–5): 276. 1830. TYPE: Chile. *T. Haenke s.n.* (holotype, PR not seen; isotypes, B!, BAA 1107 [fragm.] ex B!, LE-TRIN 2413.01!, US 2942410 [fragm.]). Figures 5M–P; 16D–F.

Culms and sheaths without glandular depressions. Spikelets 0.7–1.4 mm, linear to linear-lanceolate;

lower glumes 0.7–1.7 mm; sum of spikelet width and lower glume length 1.5–3.1 mm.

Distribution and habitat. Native to South America in Argentina, Bolivia, Brazil, Chile, Paraguay, Uruguay; introduced in Canada, Mexico, and U.S.A. (Nicora, 1998; Peterson & Boechat, 2001).

Specimens examined. PERU. **Ancash:** Fortaleza, *E. Anderson* 464 (US). **Apurímac:** Prov. Abancay, 17 km NE of Abancay & 16 km W of Río Apurímac, *P. M. Peterson & N. F. Refulio-Rodriguez* 16530 (US, USM); Prov. Aymaraes,

16 km NW of Chalhuanca, *P. M. Peterson & N. F. Refulio-Rodriguez* 16514 (US, USM). **Arequipa:** Prov. Arequipa, Tiabaya, *F. W. Pennell* 13152 (US); along Hwy. (Carretera Panamericana) 9.3 km SE of bridge over Río Síhuas, *J. T. Columbus, J. M. Porter & E. H. Roalson* 3526 (RSA, US); Prov. Condesuyos, below Chuquibamba, *C. Vargas C.* 019413 (CUZ); Prov. La Unión, below Cotawasi, *C. Vargas C.* 019492 (CUZ). **Cajamarca:** Prov. Cajamarca, 40 km N of Cajabamba & 13 km S of Ichocan, *P. M. Peterson & N. F. Refulio-Rodriguez* 14008 (US, USM). **Cusco:** Prov. Convención, Valle de Lucumayo, *C. Vargas C.* 020025 (CUZ); Prov. Urubamba, Urquillos–Urubamba, *C. Vargas C.* 1213 (CUZ). **La Libertad:** Prov. Trujillo, Cerro Campana, ca. 15 km al N de Trujillo, *M. O. Dillon* 2731 (US). **Lima:** Prov. Canta, 8 km SW of San Jose Canta toward Huamantango, *P. M. Peterson & N. F. Refulio Rodriguez* 17994 (US, USM); Huaura Valley, 20 km below Churín, *E. Anderson* 595 (US). **Piura:** Km 988 Panamericana, *E. Anderson* 925 (US). **San Martín:** Prov. Rioja, at Puente de Río Serranoyacu, Km 405–406, *J. L. Luteyn, I. Sánchez-Vega & M. Zapata Cruz* 15518 (NY, US). **Tacna:** Prov. Tacna, *C. Vargas C.* 018075 (CUZ).

15. *Eragrostis nigricans* (Kunth) Steud., Nom. Bot. ed. 2, 1: 563. 1840. Basionym: *Poa nigricans* Kunth, Nov. Gen. Sp. 1: 159. 1816. *Megastachya nigricans* (Kunth) Roem. & Schult., Syst. Veg. 2: 586. 1817. TYPE: Ecuador. Chillo & Sangolqui, Apr.–May, *F. Humboldt & A. Bonpland* 2291 (holotype, P-Bonpl!; isotypes, BAA 1062 [fragm.], K photo!, LE-TRIN 2371.01!, P!, US 2891495 [fragm.] ex LE-TRIN!, [fragm.] ex P!). Figures 1M–P; 10D–F.

Eragrostis scabra Phil., Fl. Atacam. 55. 1860. TYPE: Chile. Atacama: prope Paposo, Dec. 1851, *R. A. Philippi* 1051 (holotype, SGO-PHIL 357 not seen; isotypes, B!, BAA 1089 [fragm.] ex B!, US 556539 [fragm.] ex SGO-PHIL 357! & photo!).

Eragrostis rahmeri Phil., Verz. Antofagasta Pfl. 88. 1891. TYPE. Chile. Tarapacá: Quebrada de Guaviña, 13 Mar. 1885, *R. A. Philippi s.n.* 359 (holotype, SGO-PHIL 359 not seen; isotypes, BAA 1080 [fragm.], CORD!, SGO 37293 not seen, SGO 63537 not seen, SGO 62670 not seen, US 556538 [fragm.] ex SGO-PHIL 359!).

Eragrostis tristis Jedwabn., Bot. Arch. 5(3–4): 205. 1924. *Eragrostis nigricans* var. *tristis* (Jedwabn.) Pilg., Notizbl. Bot. Gart. Berlin-Dahlem 11: 778. 1933. TYPE: Bolivia. Ad Huancapamba, 15 Feb. 1910, *Pflanz* 359 (lectotype, designated here, BAA 1101 [fragm.] ex B!).

Eragrostis subatra Jedwabn., Bot. Arch. 5(3–4): 202. 1924. TYPE: Bolivia. Prope La Paz, 1889, *M. Bang* 80 [collector erroneously cited as Rusby in protologue] (holotype, B not seen; isotypes, K!, US 822065!).

Annual, caespitose; culms (10–)20–50(–80) cm tall, erect, sometimes geniculate below, mostly glabrous and somewhat shiny below the nodes. Leaf sheaths 1/3–2/3 as long as the internodes, sparsely pilose at the summit and along the upper margins, the hairs up to 2.5 mm, sometimes the margins glabrous; ligules 0.4–0.6 mm, ciliate; blades 6.5–10 × 0.2–0.5 cm, flat, occasionally loosely involute near apex, glabrous

above and below, somewhat scaberulous near apex. Panicles (5–)7–24 × 2–7(–15) cm, oblong, somewhat condensed, spikelets arranged in glomerules that are widely spaced along the channeled rachis, primary branches mostly 1–10 cm, sinuous, ascending and spreading 20°–90° from the rachises, solitary to whorled below, scaberulous, secondary branches sinuous; pulvini glabrous to sparsely pilose, the hairs up to 1.5 mm; pedicels 0.4–2(–3) mm, stiffly spreading, divaricate and stout, scaberulous. Spikelets 2.6–3.8(–4.8) × 1–1.2 mm, 2- to 4(to 5)-flowered, linear to narrowly lanceolate, grayish green to purplish green; disarticulation acropetal, with the glumes first, then the lemmas falling, paleae persistent; glumes 1–1.4 mm, subequal, ovate to lanceolate, membranous, keeled, scaberulous along the keel; lemmas 1.6–2 mm, ovate, membranous; grayish green, glabrous or with a few scattered hairs, lateral nerves sometimes distinct; apex acute, sometimes scaberulous; paleae 0.9–1.4 mm, hyaline, scaberulous along the keels; apex truncate; stamens 3, anthers 0.3–0.5 mm, purplish. Caryopses (0.6–) 0.7–1.1 mm, ovoid, striate and reticulate, shallowly to deeply grooved on the ventral surface, translucent, irregularly rectangular in cross section, reddish brown.

Distribution and habitat. Native to the Andean mountains in Argentina, Bolivia, Chile, Ecuador, and Peru (Nicora, 1998; Peterson & Boechat, 2001); occurs on rocky slopes, near cultivated fields, and disturbed roadsides; 1000–4000 m.

Phenology. Flowering September through April.

Comments. For *Eragrostis tristis*, the specimen *Pflanz* 359 at BAA, which is a fragment from the destroyed B collection, is chosen as lectotype because the author, Elizabeth Jedwabnick, most likely worked with the specimens that were housed at B.

Specimens examined. PERU. **Ancash:** Prov. Huari, Cordillera Blanca, 21 km S of Huari on rd. toward San Marcos, *P. M. Peterson & N. F. Refulio-Rodriguez* 13855 (US, USM); 4 km W of Ponto on rd. toward Palca, *P. M. Peterson, N. F. Refulio-Rodriguez, A. Cano, M. LaTorre & I. Salinas* 17927 (US, USM). **Apurímac:** Prov. Abancay, 17 km NE of Abancay & 16 km W of Río Apurímac, *P. M. Peterson & N. F. Refulio-Rodriguez* 16534 (US, USM); Prov. Aymaráes, ca. al puente Cuícua, *O. Velarde* 5688 (US); 16 km NW of Chalhuanca, *P. M. Peterson & N. F. Refulio-Rodriguez* 16509 (US, USM); 24 km NW of Chalhuanca, *P. M. Peterson & N. F. Refulio-Rodriguez* 16526 (US, USM). **Arequipa:** Prov. Arequipa, 21 km N of Yura on hwy. toward Patahuasí & 45 km NW of Arequipa, *P. M. Peterson & N. F. Refulio-Rodriguez* 18235 (US, USM); S slope of Nevado Chachani, *J. T. Columbus, J. M. Porter & E. H. Roalson* 3538 (RSA, US); Prov. Caravelí, Lomas Jahuay, ca. 33 km WNW from Chavina, *M. O. Dillon, U. Molau & P. Matekaitis* 3258 (CPUN); Prov. Caylloma, 5 km W of Chivay on rd. toward

Yanque, *P. M. Peterson & N. F. Refulio-Rodriguez* 18294 (US, USM). **Ayacucho:** Prov. Ayacucho, *J. Soukup* 5444 (US); Prov. Lucanas, 6 km E of Puquio on rd. toward Chaviña, *P. M. Peterson, M. LaTorre, A. Ramírez & D. Susanibar* 16291 (US, USM). **Cajamarca:** Prov. Cajamarca, ca. a la localidad de Jesús, *L. Sánchez Vega* 1061 (CPUN); 6 km S of Cajabamba on rd. toward Huamachuco, *P. M. Peterson & N. F. Refulio-Rodriguez* 13995 (US, USM); Prov. Cutervo, entre San Andrés y Súcota, *J. Mostacero et al.* 1713 (HUT); 13 km W of Cutervo on rd. toward Súcoto, *P. M. Peterson & N. F. Refulio-Rodriguez* 15009 (US, USM). **Cusco:** Prov. Urubamba, Yahuarmaqui, *C. Vargas* 009287 (US). **Huancavelica:** Entre Pampas y Salecambamba, *O. Torar* 3854 (US). **Huánuco:** Prov. Huanuco, Cayumba, *E. Asplund* 13451 (US). **Ica:** 32 km E of Nasca on rd. toward Puquio, *P. M. Peterson & N. F. Refulio-Rodriguez* 16424 (US, USM). **Junín:** Prov. Tarma, 1 km up rd. to Hacienda Maraynioc at Palca, *P. M. Peterson & N. F. Refulio-Rodriguez* 14051 (US, USM). **La Libertad:** Prov. Santiago de Chuco, 22 km E from Huamachuco on rd. toward Sarín, *P. M. Peterson & N. F. Refulio-Rodriguez* 13979 (US). **Lima:** Prov. Canta, 2 km SE of San Jose Canta, *P. M. Peterson & N. F. Refulio-Rodriguez* 17986 (US, USM); Prov. Lima, Huaura Valley, 10 km below Churín, *E. Anderson* 599 (US). **Moquegua:** Torata, *A. Weberbauer* 7405 (US). **Piura:** Prov. Huancabamba, 10 km N of Sondor & 3 km S of Huancabamba, *P. M. Peterson & N. F. Refulio-Rodriguez* 15166 (US, USM). **Tacna:** Prov. Tarata, Dist. Tarata, *C. Vargas C.* 009228 (CUZ); Candarave, *A. Weberbauer* 7384 (US).

16. *Eragrostis pastoensis* (Kunth) Trin., Mém. Acad. Imp. Sci. Saint-Petersbourg, Sér. 6, Sci. Math., Seconde Pt. Sci. Nat. 4(2): 71. 1836. Basionym: *Poa pastoensis* Kunth, Nov. Gen. Sp. 1: 160. 1815 [1816]. *Megastachya pastoensis* (Kunth) Roem. & Schult., Syst. Veg. 2: 587. 1817. TYPE: Colombia. Pasto, Mt. Arand, *F. Humboldt & A. Bonpland* 2149 (holotype, P-Bonpl!; isotypes, P!, P photo at K!, US 2767397 [fragm.] ex P-Bonpl!). Figures 1E–H; 17A–P.

Poa montufari Kunth, Nov. Gen. Sp. 1: 159. 1815 [1816]. *Eragrostis montufari* (Kunth) Steud., Nom. Bot. (ed. 2) 1: 563. 1840. *Megastachya montufari* (Kunth) Roem. & Schult., Syst. Veg. 2: 586. 1817. TYPE: Ecuador. Pichincha: betw. Pucambo & San Antonio de Lulumbamba, Apr.–May, *F. Humboldt & A. Bonpland s.n.* (holotype, P-Bonpl!; isotypes, BAA 1056!, P!, US 2891497! [fragm.] ex P-Bonpl!).

Poa olmedoi Kunth, Nov. Gen. Sp. 1: 159–160. 1815 [1816]. *Megastachya olmedoi* (Kunth) Roem. & Schult., Syst. Veg. 2: 586. 1817. *Eragrostis olmedoi* (Kunth) Steud., Nom. Bot. (ed. 2) 1: 564. 1840. TYPE: Peru. July, *F. Humboldt & A. Bonpland s.n.* (holotype, P!).

Poa tenax Kunth, Nov. Gen. Sp. 1: 160. 1815 [1816]. *Eragrostis tenax* (Kunth) Steud., Nom. Bot. (ed. 2) 1: 564. 1840. *Megastachya tenax* (Kunth) Roem. & Schult., Syst. Veg. 2: 587. 1817. TYPE: Ecuador. Apr.–May, *F. Humboldt & A. Bonpland s.n.* (holotype, P!; isotype, US 2891490 [fragm.] ex P-Bonpl!).

Poa setifolia Benth., Pl. Hartw. 262. 1846. *Eragrostis setifolia* (Benth.) Steud., Syn. Pl. Glumac. 1: 274. 1854, nom. illeg. hom. TYPE: Ecuador. Quito, *Hartweg*

1452 (holotype, K!; isotypes, US 2826937 [fragm.] ex K!, US 2850739 [fragm.] ex CGE!, [fragm.] ex P!, [fragm.] ex P-STEUD!).

Eragrostis lehmannii Pilg., Bot. Jahrb. Syst. 27(1–2): 32. 1899. TYPE: Ecuador. ca. Baños ad flumen Tunguragua, 1800–2500 m, *F. C. Lehmann* 5283 [error for 5823] (isotype, US 2767406 [fragm.]).

Eragrostis virescens var. *trachyphylla* Hack., Anales Mus. Nac. Buenos Aires 13: 505. 1906. TYPE: Argentina. Tucuman: *Stuckert herb. arg.* 14866 ex *Lillo Herb. arg.* 3192 (holotype, W not seen; isotype, US 2942411 [fragm.]).

Eragrostis buchtienii Hack., Repert. Spec. Nov. Regni Veg. 6: 157. 1908. TYPE: Bolivia. Sud Yungas: Simpayas bei Yanacachi, *O. Buchtien* 428 (holotype, W not seen; isotype, US 77388!).

Perennial, caespitose, with innovations; culms 30–90 cm tall, erect, sometimes geniculate below, glabrous and somewhat shiny below the nodes. Leaf sheaths overlapping below, 3/4 as long as the internodes above, ciliate at the summit and along the upper margins; ligules 0.2–0.5 mm, ciliate; blades 5–40(–45) × 0.1–0.4(–0.7) cm, involute or flat, glabrous to scaberulous below and scaberulous above, sometimes with scattered hairs, the hairs up to 4 mm. Panicles 8–45 × 1–27 cm, ovate, lanceolate to narrowly oblong, contracted or open, rachis glabrous, ascending primary branches 1–20 cm, appressed to widely spreading up to 80° from the rachises, the branches glabrous to scaberulous, not floriferous near base; secondary branches composed of loosely overlapping spikelets; pulvini ciliate or glabrous; pedicels 0.5–5 mm, erect, mostly appressed, sometimes with hairs. Spikelets 2–6 × 1–1.8 mm, 2- to 8-flowered, lanceolate to oblong-ovate, inflated to slightly compressed, plumbeous, sometimes purple-tinged, rachilla sometimes sparingly ciliate; disarticulation acropetal, with the glumes first then the lemmas falling individually, paleae persistent; glumes 1–1.9 mm, subequal, broadly ovate to lanceolate, membranous, subhyaline, keeled, scaberulous along the keel; lower glume 1–1.4 mm, narrow lanceolate; upper glume 1.2–1.9 mm, usually broader than the lower; lemmas 1.2–2(–2.1) mm, ovate to broadly ovate, membranous, lateral nerves obscure, keeled, especially toward the apex, scaberulous along the keel; apex acute; paleae 1–2 mm, membranous to partially hyaline, scaberulous along the keels; apex obtuse to truncate; stamens 3, anthers 0.3–0.6 mm, reddish purple. Caryopses 0.4–0.9 mm, obovoid to prism-shaped, striate and reticulate, usually with a ventral groove, irregularly rectangular in cross section, light reddish brown to translucent. $2n = 70$ (Bowden & Senn, 1962, as *Eragrostis montufari*).



Figure 17. *Eragrostis pastoensis* (P. M. Peterson, C. R. Annable & M. E. Poston 8910; P. M. Peterson & E. J. Judziewicz 9268). —A. Habit. —B. Ligule. —C. Portion of the panicle. —D. Spikelet. —E. Lower glume (dorsal view). —F. Lower glume (ventral view). —G. Upper glume (dorsal view). —H. Upper glume (ventral view). —I. Rachilla with floret. —J. Lemma (dorsal view). —K. Lemma (ventral view). —L. Palea enclosing the stamens and lodicules (side view). —M. Palea enclosing the stamens, pistil, and lodicules. —N. Palea enclosing the pistil and lodicules. —O. Stamens and lodicules. —P. Pistil.

Distribution and habitat. Native to South America in Argentina, Bolivia, Brazil, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela (Nicora, 1998; Peterson & Boechat, 2001); occurs on dry rocky hillsides, slopes, pastures, roadsides, and barrancas from 1400–3600 m.

Phenology. Flowering December through June.

Specimens examined. PERU. **Amazonas:** Prov. Bongará, 1 km up Shipasbamba rd. from Camp. Ingenio, *P. C. Hutchinson & J. K. Wright* 3963 (US). **Ancash:** Prov. Huari, Cordillera Blanca, 21 km S from Huari on rd. toward San Marcos at Río Mosna, *P. M. Peterson & N. F. Refulio-Rodriguez* 13859 (US, USM). **Apurímac:** Prov. Abancay, near Abancay Quisapata, *C. Vargas C.* 008899 (CUZ); Prov. Abancay/Andahuaylas, 4.8 km SW of Abancay on rd. to Andahuaylas, *P. M. Peterson & N. F. Refulio-Rodriguez* 16649 (US, USM); Prov. Aymaráes, 9 km SW of Cotaruse on rd. toward Puquio, *P. M. Peterson & N. F. Refulio-Rodriguez* 16481 (US, USM); 21 km NW of Chalhuanca, *P. M. Peterson & N. F. Refulio-Rodriguez* 16522. **Ayacucho:** Prov. Huamanga, Ayacucho, *O. Velarde* 6231 (US); 25 Mar. 1946, *C. Vargas C.* 5981 (CUZ). **Cajamarca:** Prov. Cajamarca, Cerro Huacarís, Valle de Cajamarca, *I. Sánchez Vega* 747 (CPUN); 1 km S of Huambocancha, *P. M. Peterson & N. F. Refulio-Rodriguez* 14846; Prov. Chota, 7 km N of Chota on rd. toward Conchan, *P. M. Peterson & N. F. Refulio-Rodriguez* 14974 (US, USM); Prov. Contumazá, Corlás, Cascas-Contumazá, *A. Sagástegui & S. Leiva G.* 15514 (HIAO); Prov. Cutervo, near Muñuño, *S. Llatas Q.* 89 (HUT); 13 km W of Cutervo on rd. toward Súcoto, *P. M. Peterson & N. F. Refulio-Rodriguez* 15006 (US, USM). **Cusco:** Prov. Urubamba, 20 km N of Ollantaytambo, *A. S. Hitchcock* 22522 (US). **Huancavelica:** Mejorada, entre Izcuchaca y Acoria, *O. Tovar* 2455 (US, USM). **Junín:** Prov. Oxapampa, Oxapampa, *O. Velarde* 5427 (US). **La Libertad:** Prov. Santiago de Chuco, 22 km E from Huamachuco on rd. toward Sarín, above Río Chusgón, *P. M. Peterson & N. F. Refulio-Rodriguez* 13982 (US, USM). **Piura:** Prov. Huancabamba, along rd. to Jaén & Moyobamba, *J. T. Columbus, J. M. Porter & E. H. Roalson* 3458 (RSA, US); 14 km E of Sondor on rd. toward Tabaconas, *P. M. Peterson & N. F. Refulio-Rodriguez* 15161 (US, USM).

- 17. *Eragrostis pectinacea*** (Michx.) Nees var. **pectinacea**, Fl. Afr. Austral. Ill. 406. 1841. Basionym: *Poa pectinacea* Michx., Fl. Bor.-Amer. 1: 69. 1803. TYPE. U.S.A. Illinois: *Michaux s.n.* (holotype, P-MICH!; isotype, US 2851264 [fragm.] ex P!). Figures 6M–P; 18A–C.

Eragrostis diffusa Buckley, Proc. Acad. Nat. Sci. Philadelphia 14: 97. 1862. *Eragrostis purshii* var. *diffusa* (Buckley) Vasey, Contr. U.S. Natl. Herb. 1(2): 59. 1890. TYPE: U.S.A. Texas. *S. B. Buckley s.n.* (lectotype, designated by Hitchcock, Man. Grasses U.S. 849. 1935 [without citing a specific sheet or a specific herbarium], PH not seen; isotype, US 91621!).

Annuals, caespitose, without glandular pits; culms 10–80 cm tall, erect to geniculate or decumbent below, glabrous. Leaf sheaths overlapping below, 1/2–3/4 as long as the internodes above, hirsute at the apices, hairs to 4 mm long; ligules 0.2–0.5 mm;

blades 2–20 × 0.1–0.45 cm, flat to involute, abaxial surfaces glabrous and smooth, adaxial surfaces scabridulous. Panicles 5–25 × 3–12(–15) cm, ovoid to pyramidal, usually open, sometimes contracted, primary branches 0.6–8.5 cm, appressed or slightly diverging to 20° from the rachises, solitary or paired at the lowest 2 nodes; pulvini glabrous or sparsely hairy; pedicels 1–7 mm, flexible, appressed to widely divergent, sometimes capillary. Spikelets 3.5–11 × 1.2–2.5 mm, 6- to 22-flowered, linear-oblong to narrowly lanceolate, plumbeous, yellowish brown, or dark reddish purple; disarticulation acropetal, paleae persistent; glumes 0.5–1.7 mm, subequal, subulate to ovate-lanceolate, hyaline; lower glumes 0.5–1.5 mm, at least 1/2 as long as the adjacent lemmas; upper glumes 1–1.7 mm, usually broader than the lower glumes; lemmas 1–2.2 mm, ovate-lanceolate, hyaline to membranous, grayish green proximally, reddish purple distally, lateral veins moderately conspicuous; apex acute; paleae 1–2 mm, hyaline to membranous, keels scabridulous; apex obtuse; stamens 3; anthers 0.2–0.4 mm, purplish. Caryopses 0.5–1.1 mm, rectangular-prismatic, slightly laterally flattened, striate and reticulate, rectangular with nearly equal sides in cross section, brownish. $2n = 60$ (Koch, 1974; Davidse, 1981).

Distribution and habitat. Native to the Americas; found in North America, Central America, the Caribbean, and most of South America (not known from Chile and Colombia); it grows in disturbed sites such as roadsides, railroad embankments, gardens, and cultivated fields; 150–2500 m (Peterson & Boechat, 2001).

Phenology. Flowering February through April.

Specimens examined. PERU. **Arequipa:** Prov. Caravelí, Lomas de Jahuay, 33 km NW de Chaviña, *M. Dillion, U. Molau & P. Matekaitis* 3259 (CPUN, F). **La Libertad:** Prov. Santiago de Chuco, 22 km E of Huamachuco on rd. toward Sarín, above Río Chusgón, *P. M. Peterson & N. F. Refulio-Rodriguez* 13981 (US, USM). **Lambayeque:** Prov. Lambayeque, Olmos, N side of Río Olmos, *J. T. Columbus, J. M. Porter & E. H. Roalson* 3451 (RSA, US).

- 18. *Eragrostis peruviana*** (Jacq.) Trin., Mém. Acad. Imp. Sci. St.-Petersbourg, Sér. 6, Sci. Math. 1(4): 396. 1830. Basionym: *Poa peruviana* Jacq., Collectanea 1: 107. 1786 [1787]. TYPE: Peru. *N. J. von Jacquin* (holotype, W not seen; isotype, LE not seen, US 2851260 [fragm.]). Figures 3M–P; 19A–C.

Koeleria multiflora Regel & Herter, Index Sem. (St. Petersburg) 23. 1858. TYPE: Chile. Cultivated seed from Chile, *M. Philippe s.n.* (holotype, LE not seen).

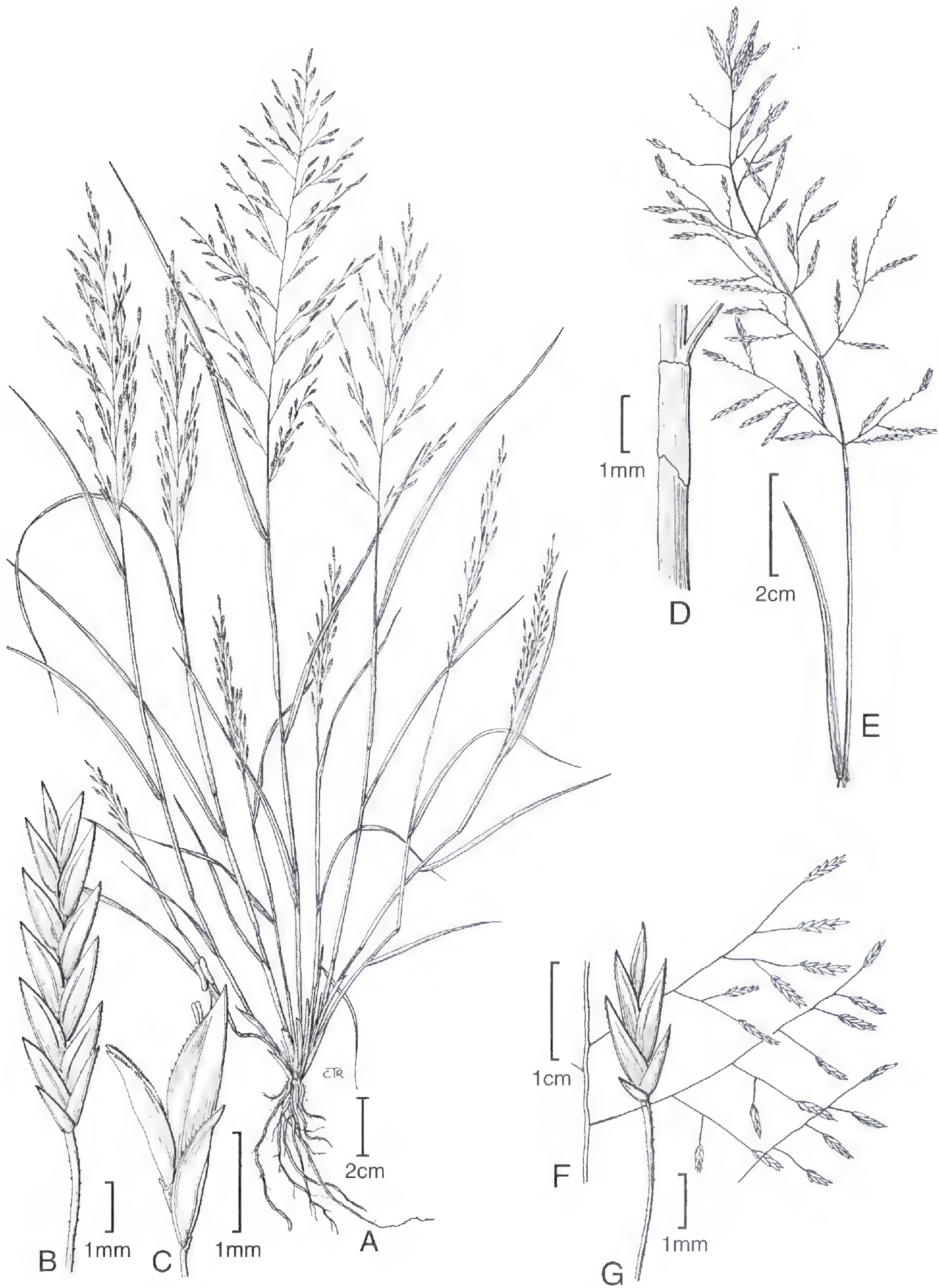


Figure 18. *Eragrostis pectinacea*. —A. Habit. —B. Spikelet. —C. Rachilla with three florets. *Eragrostis pilosa*. —D. Culm rachis showing glandular band. —E. Panicle with flag leaf. —F. Panicle. —G. Spikelet.

Eragrostis deserticola Phil., Fl. Atacam. 55. 1860. TYPE: Chile. Atacama: ca. Hueso Parado, 1200 m. R. A. Philippi 409 (holotype, SGO-PHIL 358 not seen; isotypes, BAA [fragm.], SGO 63452 not seen, US 556537 [fragm.] ex SGO-PHIL 358!).

Eragrostis peruviana var. *brachythyrso* Pilg., Bot. Jahrb. Syst. 37: 375. 1906. TYPE: Peru. Mollendo, in formatione

“loma,” 200–600 m, Oct. 1902, A. Weberbauer 1462 (lectotype, designated by Nicora [as “holotypus”], Gayana, Bot. 51: 2. 1994, B not seen; isotype, US 2851259 [fragm.]).

Annual, caespitose; culms (8–)27–37 cm tall, erect to prostrate, geniculate and many branched



Figure 19. *Eragrostis peruviana* (M. O. Dillon, U. Molau & P. Matekaitis 3314). —A. Habit. —B. Spikelet. —C. Floret. *Eragrostis weberbaueri* (P. M. Peterson & N. F. Refulio-Rodriguez 13917). —D. Habit. —E. Spikelet. —F. Floret.

below, mostly glabrous below, nodes glabrous or with a few hairs, 3 to 5 nodes per culm. Leaf sheaths 1/2 to as long as the internodes, sparsely pilose, the hairs papillose-based up to 2.5 mm, ciliate at the summit; ligules 0.3–0.8 mm, ciliate; blades 3–6(–9) $\times$ 0.15–0.3 cm, flat to involute, sparsely pilose, scaberulous above and along margins. Panicles 1.6–8.5 $\times$ 0.8–1.2(–3) cm, oblong, spiciform and densely flowered, interrupted below, greenish with a hint of purple, primary branches 0.5–3 cm, ascending, tightly appressed, flowered to base; rachis puberulent and scabrous; pulvini glabrous; pedicels 0.2–0.3 mm. Spikelets 3–4.5 $\times$ 1.7–2.2 mm, 4- to 8-flowered, ovate, greenish to stramineous, strongly compressed; disarticulation of entire florets with rachilla attached usually just above the glumes, glumes deciduous; glumes 1–1.6 mm, subequal, ovate, hyaline, membranous, glabrous; apex acute, sometimes mucronate, the mucro less than 0.4 mm; lower glume 1–1.2(–1.4) mm; upper glume 1.3–1.6 mm; lemmas 1.7–2.4 mm, ovate, lateral nerves conspicuous, often green, scaberulous on the keel; apex acute often mucronate, the mucro less than 0.4 mm; paleae 0.8–1.5 mm, hyaline, keels ciliate, the cilia 0.3–0.5 mm, soft and silky; apex obtuse to truncate; stamens 3, anthers 0.2–0.3 mm, reddish brown. Caryopses 0.4–0.6(–0.7) mm, ovoid to ellipsoid, somewhat laterally flattened, striate and reticulate, elliptical-obovate to circular in cross section, reddish brown, sometimes whitish.

Distribution and habitat. Endemic to the coast of Peru and northern Chile; occurs in lomas vegetation in sandy soils and hills in desert habitats; 0–1000 m (Nicora, 1994).

Phenology. Flowering September through February.

Specimens examined. PERU. **Ancash:** Prov. Santa, Lomas de Casma, *R. Ferreyra* 8030 (US, USM). **Arequipa:** Prov. Caravelí, Lomas de Atiquipa, *R. Ferreyra* 6480 (US, USM); Prov. Mollendo, *C. Vargas C. s.n.* (CUZ). **Ica:** Prov. Nasca, Lomas de Marcona, al S de Nasca, *R. Ferreyra* 13376 (US, USM). **La Libertad:** Prov. Trujillo, Cerro Cabezón, *A. Sagástegui A. et al.* 10470 (US). **Lambayeque:** Prov. Chiclayo, Cerro Reque, *S. Llatas Q.* 335 (CPUN). **Lima:** Prov. Lima, Chorrillos near Lima, *J. F. Macbride* 5847 (US). **Moquegua:** Prov. Moquegua, Ilo, Lomas de Mostacilla, *C. Vargas C.* 017979 (CUZ). **Tacna:** Prov. Tacna, ca. 21 km SE of Moquegua–Tacna at Km 1225 S of Lima, *M. O. Dillon, P. Matekaitis & L. Watanabe* 3342 (CPUN, F, US).

19. *Eragrostis pilgeri* Fedde, Just's Bot. Jahresber. 3: 18. 1908. *Eragrostis andicola* Pilg., Bot. Jahrb. Syst. 37: 377. 1906, nom. illeg. TYPE: Peru. Ancash: Hacienda Cajabamba, entre Samanco y

Caraz, 27 May 1903, *A. Weberbauer* 3114 (lectotype, designated by Alegría & Granda, Sida 19: 1158. 2001, MOL not seen; isotypes, BAA 999 [fragm.] ex B!, US 2766205 [fragm.!).

Perennials, caespitose with intravaginal innovations; culms 26–84 cm tall, erect, terete near base, glabrous below the nodes; nodes mostly basal or 1 to 2 above; internodes glabrous. Leaf sheaths 6–16 cm, longer than the lower internode if present, mostly glabrous or with scattered hairs near the summit, the hairs up to 1.3 mm; upper sheaths sometimes with minute, whitish glands along the veins; margins mostly smooth, usually with a large tuft of hairs near the summit, these hairs up to 3 mm; collar visible, yellowish; ligules 0.4–0.7 mm, ciliate, sometimes these hairs extending up to 2.5 mm, these breaking off at maturity; blades (6–)10–22(–26) $\times$ 0.1–0.25 (–0.30) cm, flat above the ligule to tightly involute above, apically acuminate, usually densely pilose to villous near base above and below to sparsely pilose to villous near base and glabrous above, the hairs up to 2.5 mm. Panicles 10–20(–38) $\times$ 5–15 cm, ovate, open, primary branches mostly 1.5–11 cm, naked near base, the loosely flowered branches spreading 20°–80° from the rachises with spreading secondary branches, 1 to 3 per node; pulvini in the axils of primary and secondary branches glabrous to sparsely villous, the hairs up to 5 mm; pedicels 1.2–7 mm, delicately spreading, sinuous to flexuous, scaberulous and sometimes with a minute, irregularly shaped, whitish gland at apex. Spikelets 3–6.1 $\times$ (2–)2.2–4.5 mm, florets 3 to 8, ovate, dark green with small plumbeous spots; rachilla flattened, with hairs more numerous at the base where the floret is attached and sometimes densely ciliate along the margins, the hairs 0.4–1.8 mm; spikelets spreading 30°–45° from the rachilla axis; disarticulation with the glumes first then the lemmas falling individually leaving the paleae on the rachilla; glumes 2–2.8 mm, about equal in length, shorter than the lower lemma, lanceolate to ovate, membranous, keeled, scaberulous along the keel and sometimes with minute, white, raised glands; apex acute to acuminate, often mucronate, the mucro up to 0.5 mm; lemmas 2–3.2 mm, broadly ovate, membranous, lateral veins somewhat obscure, keeled, scaberulous along the keel and near the apex, the veins sometimes with minute, whitish, raised glands; apex acute, often darker than below; paleae 2–3.1 mm, elliptic, membranous, keels usually sometimes with minute, whitish, raised glands; apex truncate to obtuse, sometimes minutely erose; stamens 3, anthers 1.2–2 mm, yellow to purplish at maturity. Caryopses 0.7–0.9 mm, rectangular-prismatic, striate and reticulate, deeply grooved on the ventral surface,

rectangular to triangular in cross section, dark reddish brown.

Distribution and habitat. Endemic to Peru and known only from Ancash and Cajamarca Departments (Peterson et al., 2000); steep rocky slopes, hillsides, and sandy slopes associated with xerophytic plants such as *Agave* L., *Commelina* L., *Lupinus* L., *Puya* Molina, *Vicia* L., *Viguiera* Kunth, and other shrubby Asteraceae; 2200–3200 m.

Phenology. Flowering February through April.

Comments. There has been much confusion with this species from its initial description by Pilger (1906) as *Eragrostis andicola* Pilg., a later homonym (not *E. andicola* R. E. Fr.), and subsequent naming by Fedde (1908) as *E. pilgeri* Fedde. Hitchcock (1927) also replaced *E. andicola* Pilg. with *E. pilgeriana* Hitchc., also a later homonym (not *E. pilgeriana* Dinter ex Pilg). More recently, Alegría Olivera and Granda Paucar (2001) lectotypified *E. pilgeri* and its synonyms and have questioned the validity of *E. ancashensis* P. M. Peterson, Refulio & Tovar. We actually agree with most of their assessment that *E. ancashensis* should not be recognized at the specific level, but we feel the presence of glands on the sheaths, pedicels, glumes, lemmas, and paleae is sufficient to warrant subspecific recognition.

KEY TO THE SUBSPECIES OF *ERAGROSTIS PILGERI* IN PERU

- 19a. Glumes, lemmas, and paleae without glands or rarely with a few white glands on midvein of the glume only; pedicels rarely with a minute, irregularly shaped, white gland at apex
..... *E. pilgeri* subsp. *pilgeri*
- 19b. Glumes, lemmas, and paleae with numerous minute, white, raised glands along the veins; pedicels with a minute, irregularly shaped, white gland at apex
..... *E. pilgeri* subsp. *ancashensis*

19a. *Eragrostis pilgeri* Fedde subsp. *pilgeri*.
Figures 4M–P; 15D–G.

Eragrostis andicola f. *humilior* Pilg., Bot. Jahrb. Syst. 37: 377. 1906. TYPE: Peru. Ancash: Hacienda Cajabamba, entre Caraz y Samanco, 3700 m, May 1903, *Weberbauer* 3036 (lectotype, designated by Alegría & Granda, Sida 19: 1158. 2001, MOL not seen; isotype, MOL not seen).

Eragrostis carazensis Pilg., Bot. Jahrb. Syst. 56(Beibl. 123): 27. 1920. TYPE: Peru. Ancash: Craz, 2200–2500 m, 12 May 1903, *A. Weberbauer* 2999 (lectotype, designated by Alegría & Granda, 2001: 1158, MOL not seen; isotype, BAA 1018 [fragm.] ex B!, US 2891460!).

Upper leaf sheaths usually without minute, white glands along the veins; pedicels rarely with a minute, irregularly shaped, white gland at apex. Spikelets with the rachilla densely or sparsely ciliate, the hairs mostly 0.4–1.8 mm; glumes without or rarely with

a few minute, white, raised glands along the keel; lemmas without glands; paleae without glands.

Specimens examined. PERU. **Ancash:** Prov. Corongo, 7 km NW of Bambus, *P. M. Peterson & N. F. Refulio Rodríguez* 13915, 13919 (US, USM); Prov. Huaylas, Huascarán Nat. Park, Ausquispuquio, *D. N. Smith, R. Valencia & Buddensick* 11959 (HUT); Puente Paria, *Proaño* 63 (US). **Cajamarca:** Prov. Cajamarca, Cajamarca, cañada above town, *E. Anderson* 661 (US).

19b. *Eragrostis pilgeri* subsp. *ancashensis* (P. M. Peterson, Refulio & Tovar) P. M. Peterson & Sánchez Vega, stat. et comb. nov. Basionym: *Eragrostis ancashensis* P. M. Peterson, Refulio & Tovar, Sida 19(1): 66. 2000. TYPE: Peru. Ancash: Prov. Recuay, Cordillera Blanca, ca. 20 km E of Raquia on Rt. 02-014, on rd. to Huaraz, 10°08'55.8"S, 77°19'48.8"W, 3000 m, 20 Mar. 1997, *P. M. Peterson & N. F. Refulio Rodríguez* 13793 (holotype, USM!; isotypes, K!, MO 5156401!, NY!, RSA!, TAES!, UC!, US 3404098!, US 3404099!, WIS!). Figures 4I–L; 20A–K.

Eragrostis andicola var. *robustior* Pilg., Bot. Jahrb. Syst. 37: 377. 1906. TYPE: Peru. Ancash: Cajatambo Prov., *A. Weberbauer* 2746 (lectotype, designated by Alegría & Granda, 2001: 1158. MOL not seen; isotype, US 2850747 [fragm.]).

Upper leaf sheaths usually with minute, whitish glands along the veins; pedicels with a minute, irregularly shaped, white gland at apex. Spikelets with a rachilla densely ciliate, the hairs 0.8–1.8 mm; glumes with numerous minute, white, raised glands along the keel; lemmas with minute, white, raised glands along the keel and lateral veins; paleae with white glands along the keels.

20. *Eragrostis pilosa* (L.) P. Beauv. subsp. *pilosa*. Ess. Agrostogr. 71: 162, 175. 1812. Basionym: *Poa pilosa* L., Sp. Pl. 1: 68. 1753. TYPE: "Gramin paniculis elegantissimis, majus, locustis, purpureo-spadiceis, minoribus" in Scheuchzer, Agrostographia: 193, t. 4, f. 3. 1719 (lectotype, designated by Du Puy et al., Fl. Australia: 472. 1993). [EPITYPE: Italy. 9–10 Aug. 1902, *A. Kneucker*, Gram. Exsicc. XII, 344 (epitype, designated by H. Scholz in Cafferty et al., Taxon 49: 256. 2000, B!; US 557051!)]. Figures 6E–H; 18D–G.

Annual, caespitose; culms 8–45(–70) cm tall, erect or geniculate spreading below, glabrous or occasionally with a few glandular pits. Leaf sheaths overlapping below, about 1/2 to as long as the internodes above, ciliate at the summit and collar or glabrous, the hairs up to 3 mm; ligules 0.1–0.5 mm, ciliate; blades 2–15(–20) × 0.1–0.25(–0.4) cm, flat, scaberulous

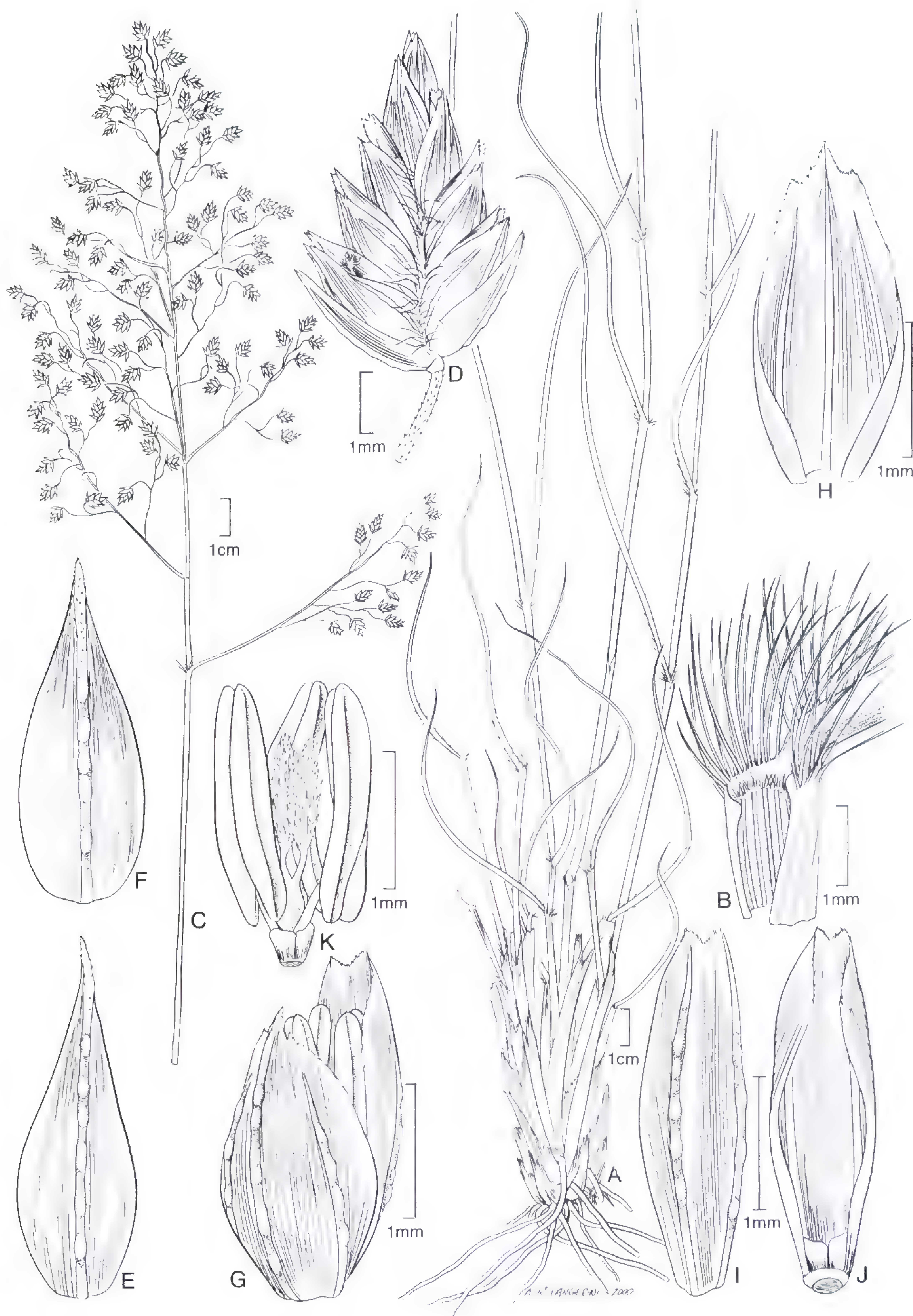


Figure 20. *Eragrostis pilgeri* subsp. *ancashensis* (P. M. Peterson & N. F. Refulio Rodríguez 13793). —A. Habit. —B. Ligule. —C. Panicle. —D. Spikelet. —E. Lower glume. —F. Upper glume. —G. Floret. —H. Lemma (ventral view). —I. Palea (dorsal view). —J. Palea enclosing the lodicules. —K. Stamens, pistil, and lodicules.

above and glabrous below with a few hairs near the base. Panicles 4–20(–28) × 2–15(–18) cm, ellipsoid to ovoid, open, diffuse, the ascending, capillary often drooping, primary branches 1–10 cm, spreading 10°–

80°(–110°) from the rachises, usually whorled on the lowest two nodes, glabrous to scaberulous; pulvini glabrous to occasionally sparsely ciliate; pedicels 0.8–10 cm, erect to flexuous, appressed to spreading,

scaberulous. Spikelets (2–)3.5–6(–10) $\times$ 0.6–1.3 (–1.8) mm, (3 to)5- to 17-flowered, linear-oblong to narrowly ovate, plumbeous; disarticulation acropetal with the glumes first then the lemmas and paleae falling individually, paleae easily deciduous; glumes 0.3–1.2 mm, narrowly ovate to lanceolate, hyaline, keeled, scaberulous along the keel; lower glume 0.3–0.6(–0.8) mm; upper glume 0.7–1.2(–1.4) mm, usually broader than the lower; lemmas 1.2–1.8 mm, ovate-lanceolate, hyaline to membranous, grayish green below and reddish purple near the apex, keeled, scaberulous along the keel near apex, lateral nerves inconspicuous; apex acute; paleae 1–1.6 mm, hyaline to membranous, scaberulous along the keels; apex obtuse; stamens 3, anthers 0.2–0.3 mm, purplish. Caryopses 0.5–1 mm, obovoid to prism-shaped, dorsally flattened, smooth to striate, rectangular in cross section, light brown. $2n = 20, 36, 40$ (Bir & Sahni, 1988).

Distribution and habitat. Native in Europe, naturalized in North, Central, and South America (excluding Surinam); occurs in disturbed habitats and along forest margins in sandy or gravelly sites; 0–2700 m (Peterson & Boechat, 2001).

Phenology. Flowering September through May.

Specimens examined. PERU. **Cajamarca:** Prov. Cajamarca, Cajamarca, entre Cajamarca y Baños del Inca, *I. Sánchez-Vega & V. Torrel* 2373 (CPUN, US). **Huánuco:** Prov. Huánuco, Cerro Huánuco, *O. Velarde* 2525 (US). **Lambayeque:** Prov. Lambayeque, Cholocallca, a Motupe, *R. Ferreyra* 5866 (US, USM); N side of Río Olmos, *J. T. Columbus, J. M. Porter & E. H. Rodson* 3451 (RSA, US). **Loreto:** Prov. Maynas, Iquitos, Isla Muy Muy, S of Iquitos, *H. Ellenberg* 2882 (US); Padre Isla, entrada a Yarinacocha, *S. McDaniel & M. Rimachi* 23051 (AMAZ). **Piura:** Al S de Piura, desvío a Chulucanas, *R. Ferreyra* 5918 (US, USM). **Tumbes:** Zarumilla, *H. Ellenberg* 1373 (US).

- 21. *Eragrostis soratensis*** Jedwabn., Bot. Arch. 5(3–4): 213. 1924. TYPE: Bolivia. La Paz: vicinis Sorata, colle Ticacirca, Feb. 1858, *G. Mandon* 1331 (lectotype, designated by Hitchcock, Cont. U.S. Natl. Herb. 1927: 343 [without citing a herbarium], W!; isotypes, BAA 1095 ex B!, BM not seen, G not seen, GOET not seen, K!, P!, S not seen, US 1126604!, W!). Figures 5A–D; 21A–C.

Perennial, caespitose with extravaginal innovations; culms 10–40 cm tall, erect to ascending, foliage mostly basal, glabrous, 1 or 2 nodes per culm. Leaf sheaths overlapping, longer than the internodes, glabrous, pilose at the summit and along margins, to pilose on upper half, the hairs up to 2 mm; ligules 0.3–1 mm, ciliate; blades 4–10 $\times$ 0.2–0.3 cm, flat to involute above, scabrous on the

adaxial surface, sometimes pilose near base and along margins, glabrous abaxially. Panicles 10–20 $\times$ 12–19 cm, ovate to pyramidal, open, primary branches 6–12 cm, 1 or 2 per node, naked near base, spreading 25–90° from the rachises; secondary branches composed of loosely overlapping spikelets; pulvini glabrous or with a few hairs; pedicels 1.5–6 mm, erect, spreading, scaberulous. Spikelets 3.4–4.2 $\times$ 1–1.6 mm, 4- to 6(to 7)-flowered, plumbeous to purplish green; rachilla somewhat flattened with a few short hairs on the margins, the hairs less than 0.5 mm; disarticulation acropetal, glumes first then lemmas, paleae weakly persistent; glumes 1–1.4 mm, subequal, ovate; lower glume 1–1.2 mm, upper glume 1.2–1.4 mm; lemmas 1.5–1.9 mm, ovate, membranous, lateral nerves inconspicuous, scaberulous along the keel; apex acute, purplish; paleae 1.5–1.9 mm, as long as the lemmas, hyaline; stamens 3, anthers 0.3–0.4 mm, reddish brown. Caryopses 0.6–0.8 mm, obovoid to prism-shaped, striate and reticulate, laterally flattened, ventrally grooved, irregularly rectangular with lateral sides angled, reddish brown.

Distribution and habitat. Native to the Altiplano region of Bolivia and Peru near Lago Titicaca; occurs on rocky slopes and flats in puno vegetation and humid scrub; 2500–4000 m (Renvoize, 1998).

Phenology. Flowering December through May.

Specimens examined. PERU. **Ayacucho:** Prov. Huanca Sancos, 27 km NW of Putajasa & 3 km S of Sacsamarca, *P. M. Peterson, A. Cano, M. LaTorre, A. Ramírez & D. Susanibar* 16274 (US, USM). **Cusco:** Prov. Urubamba, start of the Inca Trail at Cusichaca, *B. Peyton & S. Tilney Peyton* 224 (US); Ollantaytambo, *A. S. Hitchcock* 22517 (US). **Puno:** Prov. Collao, 10 km NW of Pomata on rd. toward Ilave, *P. M. Peterson, N. F. Refulio Rodríguez & F. Salvador Pérez* 11625 (US, USM); Juliaca, *H. V. Harlan* s.n. (US).

- 22. *Eragrostis tenuifolia*** (A. Rich.) Hochst. ex Steud., Syn. Pl. Glumac. 1: 268. 1854. Basionym: *Poa tenuifolia* A. Rich., Tent. Fl. Abyss. 2: 425. 1850 [1851]. TYPE: Ethiopia. In locis incultis Vallium prope Adoam, 18 Sep. 1837, *G. H. W. Schimper* 92 (lectotype, designated by Phillips, Fl. Ethiopia 7: 122. 1995, P!; isotypes, GOET 5814 not seen, K!, L not seen, W!, WAG not seen, US 1127147 [fragm.]). Figures 6I–L; 21D–F.

Perennial, caespitose; culms 25–75 cm tall, erect to geniculate spreading below, glabrous, 2 to 3 nodes per culm. Leaf sheaths overlapping below, 3/4 to as long as the internodes above, glabrous, pilose along the margins and at the summit, the hairs up to 2 mm long;



Figure 21. *Eragrostis soratensis* (P. M. Peterson, N. F. Refulio-Rodriguez & F. Salvador Perez 14625). —A. Habit. —B. Spikelet. —C. Rachilla with floret. *Eragrostis tenuifolia* (P. M. Peterson & O. Tovar 14049). —D. Habit. —E. Spikelet. —F. Rachilla with floret.

ligules 0.2–0.3 mm, ciliate; blades 3.5–20(–30) × 0.1–0.3 cm, flat to folded or loosely involute, glabrous to scaberulous above and glabrous below. Panicles 5–20 × 3–10(–12) cm, open, ovate to narrowly pyramidal, with a well-developed peduncle up to 18 cm, the relatively few-flowered primary branches 0.5–6 cm, spreading 40°–90° from the rachises, solitary, scaberulous; pulvini ciliate, often reddish, the hairs up to 2 mm; pedicels 2–15 mm, erect, capillary and stiff, scaberulous. Spikelets 6–12(–14) × 1.5–2.2 mm, 6- to 14-flowered, linear, plumbeous; disarticulation acropetal with the glumes first then the lemmas falling, paleae mostly persistent; glumes 0.3–1 mm, very unequal, hyaline, not keeled, glabrous; lower glume 0.3–0.6 mm, subulate to linear-lanceolate; upper glume 0.5–1 mm, lanceolate, usually broader than the lower; lemmas 1.5–2 mm, ovate, membranous, plumbeous, obscurely keeled, lateral nerves obscure, scaberulous near the apex; apex acute to obtuse; paleae 1.3–1.8 mm, membranous, plumbeous, scaberulous along the keels; apex obtuse; stamens 3, anthers 0.2–0.4 mm, red to white in age. Caryopses 0.6–1.1 mm, ovoid, strongly laterally flattened, and curved on the adaxial side, striate and reticulate, with a deep ventral groove, narrowly triangular in cross section, brownish. $2n = 40$ (Pohl & Davidse, 1971; Morton, 1993).

Distribution and habitat. Native in North Africa and Asia, naturalized and rapidly spreading in the New World tropics from Mexico, Guatemala, El Salvador, Honduras, Costa Rica to Argentina, Bolivia, Chile, Colombia, Ecuador, Peru, and Venezuela; along roadsides, city sidewalks, soccer fields, and disturbed open areas; 200–3400 m.

Phenology. Flowering October through June.

Specimens examined. PERU. **Ancash:** Prov. Bolognesi, 8 km E of Raquia & 2 km W of Cajacay on Ruta 02-014, *P. M. Peterson, N. F. Refulio-Rodriguez, A. Cano, M. LaTorre & I. Salinas* 17883 (US, USM). **Apurímac:** Prov. Aymaraes, 21 km NW of Chalhuanca, *P. M. Peterson & N. F. Refulio-Rodriguez* 16518 (US, USM). **Cajamarca:** Prov. Cutervo, near Sécoto, *I. Sánchez Vega* 4559 (CPUN, HAO); 13 km W of Cutervo on rd. toward Sécoto, *P. M. Peterson & N. F. Refulio-Rodriguez* 15012 (US, USM); Prov. San Ignacio, 21 km W of Huahuaya & 13 km E of Tamborapa, *P. M. Peterson & N. F. Refulio-Rodriguez* 15110 (US, USM). **Cusco:** Prov. Urubamba, Museo sitio Machupichu, *C. Vargas C.* 017424 (CUZ); 69 km de Cusco, entre Tancace y Ollanta, *P. Nuñez V. & E. Bengoa* 8731 (CUZ, US). **Junín:** Prov. Tarma, 1 km up rd. to Hae. Maraynioc out of Palca, *P. M. Peterson & O. Torar* 14049 (US, USM). **Piura:** Prov. Ayabaca, Añarte, ruta a Tondopa, *S. Ulatas Q.* 2151 (CPUN); Prov. Huancabamba, 10 km N of Sondor & 3 km S of Huancabamba, *P. M. Peterson & N. F. Refulio-Rodriguez* 15168 (US, USM).

23. *Eragrostis weberbaueri* Pilg., Bot. Jahrb. Syst. 37: 375. 1906. TYPE: Peru. Ancash: Pampa

Roman entre Samanco y Caraz, 2300 m, 29 May 1903, *A. Weberbauer* 3189 (holotype, B not seen; isotype, BAA 1110 [fragm.] ex B!, US 2767411!). Figures 3E–H; 19D–F.

Perennial or biennial, caespitose; culms 14–35 cm tall, erect, ascending to geniculate below, 3 nodes per culm, nodes silky pilose, the hairs up to 3 mm long, internodes with scattered hairs to glabrous. Leaf sheaths 1/2–2/3 as long as the internodes, striate, pilose, densely pilose near summit, the hairs colorless or white; ligules 0.7–1 mm, ciliate, the hairs less than 1 mm long; blades 6–9 × 0.1–0.17 cm, flat at base, folded or involute above, usually densely silky pilose above and below. Panicles 3–8(–11) × 0.5–1 cm, spiciform, narrowly oblong, clavate, sometimes interrupted below, dark green to plumbeous, rachis densely pilose, the hairs not rigid, primary branches (0.7–)1–1.7 mm, short, closely appressed, hairy; pedicels 0.2–0.3 mm. Spikelets 4–6 × 1.2–1.5 mm, 6- to 11-flowered, linear-ovate to oblong, tightly appressed, plumbeous; disarticulation acropetal, with glumes first then lemmas, paleae and rachilla persistent; glumes 1–1.8 mm, unequal, membranous; lower glume (0.8–)1–1.4 mm; upper glume 1.3–1.8 mm; lemmas 2–2.5 mm, ovate, membranous to hyaline, scabrous near apex; apex acute; paleae 1.5–1.7 mm, shorter than lemma and narrower, hyaline. Stamens 3, anthers ca. 0.4–0.5 mm, purple. Caryopses 0.6–0.7 mm, ellipsoid, faintly striate and reticulate, circular to ovate in cross section, reddish orange.

Distribution and habitat. Native to the coast of northern Chile and Peru; occurs in lomas vegetation, and western slopes of the Andes where taxa from higher elevations appear perennial and those from immediate coast appear to be annual or biennial; 0–3500 m.

Phenology. Flowering March and April.

Specimens examined. PERU. **Ancash:** Prov. Bolognesi, 8 km E of Raquia & 2 km W of Cajacay on Ruta 02-104, *P. M. Peterson, N. F. Refulio-Rodriguez, A. Cano, M. LaTorre & I. Salinas* 178776 (US, USM); Prov. Corongo, 7 km NW of Yupan on rd. to Bambus, *P. M. Peterson & N. F. Refulio-Rodriguez* 13917 (US, USM); River Valley Colca Fortaleza, *E. Anderson* 454 (US). **Arequipa:** Prov. Arequipa, Cerros de Yura (Baños), *C. Vargas C.* 7978 (CUZ); S slope of Nevado Chachani, *J. T. Columbus, J. M. Porter & E. H. Roalson* 3535 (RSA, US); 21 km N of Yura on hwy. toward Pathuasí, *P. M. Peterson & N. F. Refulio-Rodriguez* 18239 (US, USM); Prov. Camaná, entre Camaná y Arequipa, Km 161–162 Panamericana, *R. Ferreyra* 2557 (US, USM); 23 km NE of Camaná, *J. T. Columbus, J. M. Porter & E. H. Roalson* 3523 (RSA, US); Prov. Caravelí, 13 km S of Cahuacho on rd. toward Caravelí, *P. M. Peterson, M. LaTorre, A. Ramírez & D. Susanibar* 16398 (US, USM). **Ica:** 32 km E of Nasca on rd. toward Puquio, *P. M. Peterson & N. F. Refulio-Rodriguez* 16425 (US, USM). **Lima:** Matucana, *F. Macbride & Featherstone* 303 (US).

EXCLUDED NAME

Poa patula Kunth, Nov. Gen. Sp. 1: 158–159. 1815 [1816]. *Eragrostis patula* (Kunth) Steud., Nom. Bot. (ed. 2) 1: 564. 1840. *Megastachya patula* (Kunth) Roem. & Schult., Syst. Veg. 2: 585. 1817. TYPE: Ecuador. Apr.–May, *F. Humboldt* & *A. Bonpland s.n.* (holotype, P!; isotype, US 2766206 [fragm.] ex P!, P photo at US!).

Comments. The status of this species and its use are questionable. Recent use of this name in Bolivia (Renvoize, 1998), Argentina (Nicora, 1998), and Ecuador (Jørgensen & León-Yáñez, 1999) places this as a synonym of *Eragrostis tenuifolia*. However, after studying the type at P and fragment at US, we think that this taxon is not a synonym of *E. tenuifolia*. We cannot find any existing specimens from Peru that resemble the type. Therefore, we are not including this name in this treatment.

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APPENDIX I. List of names and synonyms. Accepted names are presented in boldface and synonyms are italicized.

Cynodon amabilis (L.) Raspail [= **E. tenella**]
Cynodon ciliaris (L.) Raspail [= **E. ciliaris** var. **ciliaris**]
Diandrochloa glomerata (Walter) Burkart [= **E. japonica**]

Diandrochloa japonica (Thunb.) A. N. Henry [= **E. japonica**]
Eragrostis alba J. Presl [= **E. mexicana** (Hornem.) Link subsp. **mexicana**]
Eragrostis amabilis (L.) Nees [= **E. tenella**]
Eragrostis amabilis var. *plumosa* (Retz.) E. G. Camus & A. Camus [= **E. tenella**]
Eragrostis ancashensis P. M. Peterson, Refulio & Tovar [= **E. pilgeri** subsp. **ancashensis**]
Eragrostis andicola Pilg. [= **E. pilgeri**]
Eragrostis andicola R. E. Fr.
Eragrostis andicola f. *humilior* Pilg. [= **E. pilgeri** subsp. **pilgeri**]
Eragrostis andicola var. *robustior* Pilg. [= **E. pilgeri** subsp. **ancashensis**]
Eragrostis atrovirens (Desf.) Trin. ex Steud.
Eragrostis attenuata Hitchc.
Eragrostis bahiensis var. *boliviensis* Henrard [= **E. lurida** subsp. **lurida**]
Eragrostis buchtienii Hack. [= **E. pastoensis**]
Eragrostis carazensis Pilg. [= **E. pilgeri** subsp. **pilgeri**]
Eragrostis cilianensis (All.) F. T. Hubb. [= **E. cilianensis**]
Eragrostis cilianensis (All.) Vignolo ex Janch.
Eragrostis ciliaris (L.) Nees [= **E. ciliaris** var. **ciliaris**]
Eragrostis ciliaris (L.) R. Br. var. **ciliaris**
Eragrostis ciliaris var. *patens* Chapm. ex Beal [= **E. tenella**]
Eragrostis contracta Pilg. [= **E. lurida** subsp. **contracta**]
Eragrostis contristata Nees & Meyen [= **E. lurida** subsp. **lurida**]
Eragrostis curvula (Schrad.) Nees
Eragrostis deserticola Phil. [= **E. peruviana**]
Eragrostis diffusa Buckley [= **E. pectinacea** var. **pectinacea**]
Eragrostis glomerata (Walter) L. H. Dewey [= **E. japonica**]
Eragrostis hypnoides (Lam.) Britton, Sterns & Poggenb.
Eragrostis japonica (Thunb.) Trin.
Eragrostis lehmannii Pilg. [= **E. pastoensis**]
Eragrostis limbata E. Fourn. [= **E. mexicana** subsp. **mexicana**]
Eragrostis lugens Nees
Eragrostis lurida J. Presl
Eragrostis lurida subsp. **contracta** (Pilg.) P. M. Peterson & Sánchez Vega
Eragrostis lurida J. Presl subsp. **lurida**
Eragrostis magna Hitchc.
Eragrostis maypurensis (Kunth) Steud.
Eragrostis megastachya var. *cilianensis* (All.) Asch. & Graebn. [= **E. cilianensis**]
Eragrostis mexicana (Hornem.) Link
Eragrostis mexicana (Hornem.) Link subsp. **mexicana**
Eragrostis mexicana subsp. **virescens** (J. Presl) S. D. Koch & Sánchez Vega
Eragrostis montufari (Kunth) Steud. [= **E. pastoensis**]
Eragrostis multiflora var. *cilianensis* (All.) Maire [= **E. cilianensis**]
Eragrostis neomexicana Vasey ex L. H. Dewey [= **E. mexicana** subsp. **mexicana**]
Eragrostis nigricans (Kunth) Steud.
Eragrostis nigricans var. *tristis* (Jedwabn.) Pilg. [= **E. nigricans**]
Eragrostis olmedoi (Kunth) Steud. [= **E. pastoensis**]
Eragrostis pastoensis (Kunth) Trin.
Eragrostis pectinacea (Michx.) Nees var. **pectinacea**

Eragrostis pectinacea (Michx.) Steud. [= **E. pectinacea** var. **pectinacea**]
Eragrostis peruviana (Jacq.) Trin.
Eragrostis peruviana var. *brachythyrsa* Pilg. [= **E. peruviana**]
Eragrostis pilgeri Fedde
Eragrostis pilgeri subsp. **ancashensis** (P. M. Peterson, Refulio & Tovar) P. M. Peterson & Sánchez Vega
Eragrostis pilgeri Fedde subsp. **pilgeri**
Eragrostis pilgeriana Hitchc. [= **E. andicola**]
Eragrostis pilosa (L.) P. Beauv. subsp. **pilosa**
Eragrostis pilosa var. *lugens* (Nees) Griseb. [= **E. lugens**]
Eragrostis plumosa (Retz.) Link [= **E. tenella**]
Eragrostis purshii var. *diffusa* (Buckley) Vasey [= **E. pectinacea** var. **pectinacea**]
Eragrostis rahmeri Phil. [= **E. nigricans**]
Eragrostis scabra Phil. [= **E. nigricans**]
Eragrostis setifolia (Benth.) Steud. [= **E. pastoensis**]
Eragrostis soratensis Jedwabn.
Eragrostis subatra Jedwabn. [= **E. nigricans**]
Eragrostis tenax (Kunth) Steud [= **E. pastoensis**]
Eragrostis tenella (L.) P. Beauv. ex Roem. & Schult.
Eragrostis tenella var. *japonica* (Thunb.) Roem. & Schult. [= **E. japonica**]
Eragrostis tenella var. *plumosa* (Retz.) Stapf [= **E. tenella**]
Eragrostis tenuifolia (A. Rich.) Hochst. ex Steud.
Eragrostis tristis Jedwabn. [= **E. nigricans**]
Eragrostis virescens J. Presl [= **E. mexicana** subsp. **virescens**]
Eragrostis virescens var. *trachyphylla* Hack. [= **E. pastoensis**]
Eragrostis weberbaueri Pilg.
Erosion cilianense (All.) Lunell [= **E. cilianensis**]
Erosion hypnoides (Lam.) Lunell [= **E. hypnoides**]
Koeleria multiflora Regel & Herter [= **E. peruviana**]
Megastachya amabilis (L.) P. Beauv. [= **E. tenella**]
Megastachya ciliaris (L.) P. Beauv. [= **E. ciliaris** var. **ciliaris**]
Megastachya glomerata (Walter) Schult. [= **E. japonica**]
Megastachya hypnoides (Lam.) P. Beauv. [= **E. hypnoides**]
Megastachya maypurensis (Kunth) Roem. & Schult. [= **E. maypurensis**]
Megastachya montufari (Kunth) Roem. & Schult. [= **E. pastoensis**]
Megastachya nigricans (Kunth) Roem. & Schult. [= **E. nigricans**]
Megastachya olmedoi (Kunth) Roem. & Schult. [= **E. pastoensis**]
Megastachya pastoensis (Kunth) Roem. & Schult. [= **E. pastoensis**]
Megastachya tenax (Kunth) Roem. & Schult. [= **E. pastoensis**]
Megastachya tenella (L.) Bojer [= **E. tenella**]
Neeragrostis hypnoides (Lam.) Bush [= **E. hypnoides**]
Poa amabilis L. [= **E. tenella**]
Poa atrovirens Desf. [= **E. atrovirens**]
Poa cilianensis All. [= **E. cilianensis**]
Poa ciliaris L. [= **E. ciliaris** var. **ciliaris**]
Poa glomerata Walter [= **E. japonica**]
Poa hypnoides Lam. [= **E. hypnoides**]
Poa japonica Thunb. [= **E. japonica**]
Poa lurida (J. Presl) Kunth [= **E. lurida**]
Poa maypurensis Kunth [= **E. maypurensis**]
Poa mexicana Hornem. [= **E. mexicana**]
Poa montufari Kunth [= **E. pastoensis**]

Poa nigricans Kunth [= **E. nigricans**]
Poa olmedoi Kunth [= **E. pastoensis**]
Poa pastoensis Kunth [= **E. pastoensis**]
Poa pectinacea Michx. [= **E. pectinacea** var. **pectina-**
cea]
Poa peruviana Jacq. [= **E. peruviana**]
Poa pilosa L. [= **E. pilosa** subsp. **pilosa**]

Poa plumosa Retz. [= **E. tenella**]
Poa setifolia Benth. [= **E. pastoensis**]
Poa tenax Kunth [= **E. pastoensis**]
Poa tenella L. [= **E. tenella**]
Poa tenuifolia A. Rich. [= **E. tenuifolia**]
Roshevitzia japonica (Thunb.) Tzvelev [= **E. japonica**]
Sporobolus scaber Phil. [= **E. attenuata**]